

SECRET  
IDEALIST

BYE-42181/65

Copy 1 of 6

14 OCT 1965

MEMORANDUM FOR: Director of Special Activities

ATTENTION: Chief, Contracts Division, OSA

SUBJECT: Justification of System 20 Contract Award

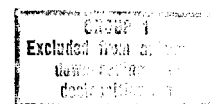
1. ASD/OEL performed studies of means to satisfy a requirement by OSA for an operational equipment which provides the IDEALIST pilot of warning of the presence of hostile aircraft within a lethal envelope. The following paragraphs cover the technical requirements, comparison of the hostile aircraft characteristics, review possible techniques, present conclusion of the studies, list contractors solicited and their responses, the approach selected and the contractor, and the recommendation to proceed with authorization for a contract to Aerojet General Corp. for two prototypes of the equipment.

2. Data provided by OSI indicates that the vulnerable zone is within an aft sector described by an azimuth angle of  $\pm 40$  degrees and an elevation angle of +20 degrees and -30 degrees. For effective tactic and/or countermeasure initiation, analysis has shown that the presence of the hostile aircraft must be determined at a range of 20 n.m. The probability for detection was set at 0.97, and, since false alarms are detrimental to mission success, a false alarm rate of less than one (1) false alarm per eight (8) hours was established. The program aircraft which will carry the device is critically effected by weight. Therefore, a maximum weight limit was set at 80 pounds. Further requirements include multitarget detection and multitarget ranging capability and a range resolution of 1/2 mile. To assure system reliability during missions and to minimize field maintenance, a MTBF goal of 1000 hours was established. Testing and documentation requirements were also defined.

25 YEAR RE-REVIEW

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3. The hostile interceptor aircraft having a capability against the program aircraft is the MIG-21. Consultation with representatives of OSI provided estimates of the hostile vehicle's performance as well as estimates of its target signatures. In regard to target signatures, the best estimate was that the MIG-21 is comparable to the F-104 in its IR radiation and radar cross section.

4. A careful review of techniques which could possibly be used to satisfy the requirements included:

- a. X- or K-band radar
- b. IR interferometer
- c. Visible spectra optical methods
- e. IR/Laser-integrated system

5. In-house analysis and review of present technologies established the basis on which the following conclusions could be made:

a. The minimum weight of a radar system capable of meeting the requirements would conservatively be between 150 and 200 pounds. Another factor involves the radome, which poses a severe installation and aerodynamic problem. If an X-band system were used, the possibility of beaconing exists. Except for the above considerations, a tail looking radar system can provide all the necessary information.

b. The use of IR interferometer techniques was eliminated due to vehicle vibration and sensor stability.

c. Based on the HUNGRY BOY tests, the probability of acquiring a target, at 20 miles, in the visible spectra is extremely low. Further, such a system can not provide range data.

d. The utilization of an integrated IR/Laser system appears to be capable of fulfilling the requirements, except lasers are not presently capable of providing ranging at distances in excess of about 15-16 miles in the atmosphere under consideration.

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Of the above listed techniques, the integrated IR/Laser system represents the best possible implementation and the radar system possibly contending.

6. Having performed "in-house" analysis, it was decided to go out with RFP's. The following corporations were solicited:

- a. Hughes Aircraft
- b. Northrop
- c. Baird Atomics
- d. Aerojet General
- e. Martin
- f. HRB-Singer
- g. ITT/FL

The contractors were provided with the requirements, target estimates and an indication that we were of the opinion that either a radar system or an integrated IR/Laser system could possibly be in order. It was also indicated that the probability of a "short run" production order, in the order of 10 to 20 units, was excellent.

7. Hughes Aircraft - Culver City, California

Hughes chose the X-band radar system approach. The system proposed was their Swiss Taran. Weight considerations ruled it out since its weight was in excess of 200 pounds. The antenna dish was 18 inches in diameter. After ruling out the radar, Hughes proposed an IR system. A quantity of about 2500 of the systems have been built for the Navy and Air Force. Delivery was quoted to be five months, the cost \$100,000 per unit (two units required per aircraft), and a weight of 52 pounds per unit. The cost did not include modifications to adapt the system to our vehicle. The MTBF of the system is only 150 hours. Information from DOD activities indicates that the system is running 70% false alarms. It can not provide ranging capability.

Rating: Unsatisfactory

8. Northrop - Hawthorne, California

Northrop did not complete their proposal due to a multimillion dollar Air Force RFP which was received during their effort on our RFP.

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Northrop was pursuing an integrated IR/Laser approach.

Rating: No Response

9. Baird Atomics - Waltham, Mass.

This corporation did not respond on the basis that they could not provide a ranging capability.

Rating: No Response

10. Aerojet General - Azusa, California

AGC proposed an integrated IR/Laser system. The system utilizes a passive IR search system, a passive IR tracking system and an IR ranging system. The approach and technology appears to be satisfactory except for the ranging capability which is effective to distances of 15 miles. Delivery: 10 months.

Rating: Satisfactory

11. Martin - Orlando, Florida

The Martin Corporation also pursued the IR/Laser approach. A great deal of effort was expended by them; however, they were unable to provide an adequate IR-search/track capability. They contacted several contractors engaged in IR-search/track equipment effort, but could not find a team member. They were enthusiastic about the concept and its feasibility.

Rating: No Response

12. HRB-Singer - State College, Pa.

HRB stated that the system requirements were beyond the scope of their activity.

Rating: No Response

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BYE-42181/65

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13. ITT/FL - Nutley, New Jersey

ITT/FL pursued a pulsed doppler radar system. After extensive analysis, they concluded the system could not be implemented within the weight limit. To eliminate the dish type antenna, an electronically scanning array which would be flush mounted on the stationary portions of the tail assembly was contemplated.

Rating: No Response

14. Of the contractors proposing, only one could be considered satisfactory. The AGC proposal defined equipment, which could provide adequate warning information. Except for weight considerations, both ITT/FL and Hughes could provide radar systems capable of performing the assigned tasks. Of the two, the approach suggested by ITT/FL on the antenna system must be considered superior for this application.

15. During the proposal evaluation period, the immediate need for an operational system became paramount. A delivery period of 10 months could not be tolerated. In an effort to provide for the deployment of a partial capability in a significantly reduced time scale, a two phase program was developed.

Phase I entailed the development, design and fabrication of a search set which would provide the pilot with sector warning information. Ranging capability would not be provided. Prototype delivery should be made in about four months.

Phase II would implement the tracking and ranging capability. In the interests of time, cost and equipment compatibility, the Phase I equipment must be available and capable of being integrated with the Phase II equipment. Aerojet General was requested to provide cost and delivery information on Phase I. The estimated cost for two (2) Phase I prototypes was \$754, 113 with a delivery cycle of about 150 days.

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BYE-42181/65

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16. As a result of the activity described herein, request to negotiate a contract with AGC was directed to C/CD/OSA. The contract in the amount of \$725,000 was negotiated with the Aerojet General Corporation, Azusa, California, on 14 September 1965.



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Director of ELINT  
DD/S&T

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CONTROL NO.

BYE-42181/65

Cys 1&2 of 6

REFERRED TO OFFICE	RECEIVED			RELEASED		SEEN BY	
	SIGNATURE	DATE	TIME	DATE	TIME	MBOL	DATE
D/OSA	<i>cy #2 retained</i>						<i>aia</i>
Attn: C/CD/OSA	<i>- cy #1</i>						<i>JB</i>

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Handle Via Indicated Controls

**BYEMAN**

*File averted  
FH-2515  
under  
"Authorities"*

Access to this document will be restricted to those persons  
cleared for the specific projects;

**IDEALIST**

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.....

**WARNING**

This document contains information affecting the national security of the United States within the meaning of the espionage laws U. S. Code Title 18, Sections 793 and 794. The law prohibits its transmission or the revelation of its contents in any manner to an unauthorized person, as well as its use in any manner prejudicial to the safety or interest of the United States or for the benefit of any foreign government to the detriment of the United States. It is to be seen only by personnel especially indoctrinated and authorized to receive information in the designated control channels. Its security must be maintained in accordance with regulations pertaining to BYEMAN Control System.

~~TOP SECRET~~

GROUP 1  
Excluded from automatic  
downgrading and declassification

SECRET

IDEA-2574-65  
Copy 1 of 4

8 October 1965

PAYMENT PLAN FOR AEROJET-GENERAL CORPORATION

All payments to the Aerojet-General Corporation pursuant to Contract No. FH-2515, including interim and final payments for work and services performed for which vouchers will be submitted, will be accomplished as follows:

1. Interim and final vouchers submitted by Aerojet-General Corporation will be certified for payment by Budget and Finance Branch, OSA.
2. Interim and final vouchers submitted by Aerojet-General Corporation will be approved by the Contracting Officer.

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CONCURRENCES:

Chief, CD/OSA

Chief, CD/OSA

Chief, BFB/OSA

Chief, BFB/OSA

15 OCT 1965

Chief, SS/OSA

Chief, RB/OSA

Dist: 1 - CD/OSA 3 - SS/OSA  
2 - BFB/OSA 4 - RB/OSA

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OSA-2182 -71  
9 July 1971

MEMORANDUM FOR: Chief, Contract Management Division, OSA  
FROM: Chief, Budget & Finance Division, OSA  
SUBJECT: Contract Completion Contract No. FH-2515  
AEROJET GENERAL CORPORATION


1. Our records indicate that the subject contract was completed as of January 1970. The following action has been taken:

- A. Final payment made 2 April 1970.
- B. Audit report prepared 4 June 1971.

Following is a summary of cost:


<u>Amount Obligated</u>	<u>Amount Paid</u>	<u>Balance</u>
\$ 1,677,288.00	\$ 1,677,288.00	-0-

2. We are using this memorandum as a basis for closing this contract as all deliveries and services have been completed.

  
Chief, Budget & Finance Division  
OSA/DDS&T

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CONCU

  
Chief, Contracts Management Division, OSA

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Dist: Orig & 1 - Addressee  
1 - CMD/OSA (Urban)  
1 - B&FD/OSA (Budg-JCL)  
1 - B&FD/OSA (Contr Pmt)  
1 - RB/OSA

RWE:k1b/B&FD/OSA

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(Pursuant to "Patent Rights" Contract Clause)

Budget Bureau No. 22-R160

## INSTRUCTIONS TO CONTRACTOR

This form may be used for INTERIM and FINAL reports, and when used shall be completed and forwarded to the Contracting Officer in triplicate.

An INTERIM report shall be submitted at least every twelve months, commencing with the date of the contract, and should include only those inventions and subcontracts for which complete information has not previously been reported.

A FINAL report shall be submitted as soon as practicable after the work under the contract is complete and shall include (a) a summary of all inventions required by the contract to be reported, including all inventions previously reported and any inventions since the last INTERIM report; and (b) any required information for subcontracts which has not previously been reported.

## 1. NAME AND ADDRESS OF CONTRACTOR

Aerojet-General Corporation  
Aerojet ElectroSystems Company  
P.O. Box 296  
Azusa, California 91702

## 2. CONTRACT NUMBER

FH-2510

## 3. TYPE OF REPORT (check one)

☐ a. INTERIM☒ b. FINAL

## SECTION I - INVENTIONS ("Subject Inventions" required to be reported by the "Patent Rights" clause)

## 4. INVENTION DATA (check one)

☒ a. THERE WERE NO INVENTIONS WHICH REASONABLY APPEAR TO BE PATENTABLE

☐ b. LISTED BELOW ARE INVENTIONS WHICH REASONABLY APPEAR TO BE PATENTABLE. ANY INVENTION DISCLOSURES WHICH HAVE NOT BEEN PREVIOUSLY SUBMITTED TO THE CONTRACTING OFFICER ARE ATTACHED TO THIS REPORT.

(i) NAME OF INVENTOR	(ii) TITLE OF INVENTION	(iii) PATENT APPLICATION SERIAL NUMBER AND CONTRACTOR'S DOCKET NO.	(iv) CONTRACTOR HAS FILED OR WILL FILE U.S. PATENT APPLICATION		(v) CONFIRMATORY LICENSE OR ASSIGNMENT HAS BEEN FORWARDED TO CONTRACTING OFFICER	
			YES	NO	YES	NO
NONE						

## SECTION II - SUBCONTRACTS (Containing a "Patent Rights" clause)

## 5. LISTED BELOW IS INFORMATION REQUIRED BUT NOT PREVIOUSLY REPORTED FOR SUBCONTRACTS. (If not applicable, write "None".)

(i) NAME AND ADDRESS OF SUBCONTRACTOR	(ii) SUBCONTRACT NUMBER	(iii) DATE CLAUSE FURNISHED TO CONTRACTING OFFICER	(iv) DATE SUBCONTRACT COMPLETED

## SECTION III - CERTIFICATE

CONTRACTOR CERTIFIES THAT THIS REPORT OF INVENTIONS AND SUBCONTRACTS, INCLUDING ANY ATTACHMENTS, IS CORRECT TO THE BEST OF THE CONTRACTOR'S KNOWLEDGE AND BELIEF.

DATE

NAME OF

6/30/71

25X1

## CONTRACT CLOSING CHECK LIST

Applicable to CFF Contracts, Time and Material Contracts and Fixed Price - Price Redeterminable Contracts.

CONTRACTOR *Orget*CONTRACT NUMBER *PH-2515*TYPE OF CONTRACT *CFF*

	Accomplished	Date
(a) Performance:		
(1) Certification of satisfactory completion	<i>✓</i>	<i>1-7-70</i>
(2) Evidence of receipt of end items (if applicable)		
(b) Final invoice and Contractor's statement of cumulative claim	<i>✓</i>	<i>1-21-70</i>
(c) Final audit:		
(1) Requested	<i>✓</i>	<i>6-4-71</i>
(2) Audit report		
(d) Contractor's Release	<i>✓</i>	<i>6-30-71</i>
(e) Contractor's Assignment of Refunds, Rebates, and Credits	<i>✓</i>	
(f) Contractor's report of patents*	<i>✓</i>	
(g) Residual inventory acquired under the contract:		<i>ADIC</i>
(1) Accounting by Contractor	<i>✓</i>	<i>0239</i>
(2) Disposition thereof		
(h) Disposition of Government furnished property, if any *	<i>✓</i>	
(i) Contract amendment, if required	<i>MA</i>	
(j) Issuance of memo - Form No. 2167 with attach- ments to Finance to close contract	<i>MA</i>	
(k) Final Invoice	<i>✓</i>	
(l) Notice from Finance of final payment		
(m) Transfer of contract to:		
(1) Inactive file		
(2) Archives		

NOTE: In the case of fixed price - price redeterminable, contract items d, e, f, and g above are normally not applicable.

\*Remarks: (f) action taken on affirmative statements  
            (g) (h) action taken on disposition of property



IN REPLY REFER TO

**DEFENSE CONTRACT AUDIT AGENCY**  
CAMERON STATION  
ALEXANDRIA, VIRGINIA 22314

OSA-1306-71  
LA-70-172-721

REPLY TO:

[Redacted box]

25X1

June 4, 1971

SUBJECT: Contract Audit Closing Statement  
Contract No. FH-2515  
Aerojet Electrosystems Company  
Azusa, California

TO : Contracting Officer (Attn: W. Guthrie)

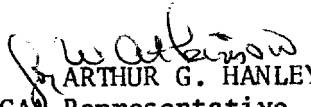
1. This contract, executed October 13, 1965, provided for the design, fabrication, and testing of two (2) prototype search sets. Work commenced in September 1965 and was essentially completed in January 1970.

2. We have examined the contractor's accounting records and financial operating procedures for the purpose of determining whether the final amount proposed by the contractor constitutes allowable cost under the terms of the contract. The examination was performed in accordance with generally accepted auditing standards and accordingly included such tests of the accounting records and other auditing procedures as were considered necessary.

3. The results of our examination follow:

-2-

	<u>CPFF</u>	<u>TM</u>	<u>Total</u>
Per Contract (Amdt. No. 14)			
Estimated Cost	\$1,468,253		
Fixed Fee	82,035		
Allotted Amount	<u>                    </u>	<u>\$127,000</u>	
	<u>\$1,550,288</u>	<u>\$127,000</u>	<u>\$1,677,288</u>
Claimed and Recommended Allowable Amount	<u>\$1,550,288</u>	<u>\$127,000</u>	<u>\$1,677,288</u>

  
ARTHUR G. HANLEY  
DCAR Representative - APL

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OEL-013/70

7 JAN 1970

MEMORANDUM FOR: Director of Special Activities

ATTENTION: Chief, Contracts Management Division


SUBJECT: Completion of Contract No. FH-2515 with  
Aerofet General Corporation

1. Subject contract provided for research, development, and testing of two (2) prototype systems.

2. The deliverable items have been accepted and all work has been satisfactorily completed with the exception of \$39,000 fixed price effort added by Amendment No. 6, i. e., redesign and retrofit, the prototype for target elevation position encoding.

3. It is requested that CMD take necessary action to transfer the \$39,000 encoder effort out of FH-2515 and include it in effort now being performed by the contractor under Contract AG-1102. All residual inventory from FH-2515 should also be transferred to AG-1102.

4. Upon completion of above transfers, this contract can be considered satisfactorily completed and recommended for closing.

  
Director of ELINT  
DD/S&T

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GROUP 1  
Excluded from automatic  
downgrading and  
declassification

[REDACTED] :jc  
CMD/OSA  
6855  
10 FEB 1970

~~SECRET~~

CMD/OSA  
CMD/OSA  
D/SA  
RE/OSA

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7.6 FH 295

SECRET

ADIC 0239

BORAX INFO CHECK

ALL DELIVERABLE ITEMS AND RESIDUAL PROPERTY ON FH-2510 AND  
FH-2515 ARE TO REMAIN IN PLACE AND PROPERTY ACCOUNTABILITY  
TO BE MAINTAINED UNDER AG-1102.

END OF MESSAGE

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[REDACTED]  
C/CMD/OSA

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**Howe**

DATE 21 January 1970

MEMORANDUM FOR: Chief, Industrial Audit Division, OSA

SUBJECT: REQUEST FOR AUDIT

CONTRACTOR:

Aerojet-General

Contract No.

FH-2515

Type of Contract:

CPFF & T&M

Type of Audit Required:

Final

Dollar Value of Contract:

\$1,677,288

Date Audit Required:

ASAP

NEGOTIATOR:

25X1

25X1

Date

1/17/70

MEMORANDUM FOR: Contracts Management Division, OSA

Audit Scheduled For:

ASAP

**Howe**  
C/IAD/OSA



**SERVICES OTHER THAN PERSONNEL**

U.S. DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION

DATE VOUCHER PREPARED

FEB 16 1970

CONTRACT NUMBER AND DATE

FH-2515

REQUISITION NUMBER AND DATE

Compl. #14

SCHEDULE NO.

PAID BY

PAYEE'S  
NAME  
AND  
ADDRESS

DATE INVOICE RECEIVED

DISCOUNT TERMS

PAYEE'S ACCOUNT NUMBER

SHIPPED FROM

TO

WEIGHT

GOVERNMENT B/L NUMBER

NUMBER AND DATE OF ORDER	DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	QUAN- TITY	UNIT PRICE		AMOUNT (1)
				COST	PER	
From Inception to Feb. 1, 1970		See Attached Schedule for Detail				\$228,586.15

(Use continuation sheet(s) if necessary)

(Payee must NOT use the space below)

TOTAL

PAYMENT:	APPROVED FOR	EXCHANGE RATE	DIFFERENCES	
<input type="checkbox"/> COMPLETE	= \$	= \$1.00		
<input type="checkbox"/> PARTIAL	BY			
<input type="checkbox"/> FINAL	TITLE			
<input type="checkbox"/> PROGRESS		Amount verified; correct for		
<input type="checkbox"/> ADVANCE		(Signature or initials)		

Pursuant to authority vested in me, I certify that this voucher is correct and proper for payment.

(Date)

(Authorized Certifying Officer) <sup>2</sup>

(Title)

ACCOUNTING CLASSIFICATION

(Date)

15

(Date)

PAID BY	CHECK NUMBER	ON TREASURER OF THE UNITED STATES	CHECK NUMBER	ON (Name of bank)
	CASH	DATE	PAYEE	
	\$			

1 When stated in foreign currency, insert name of currency.

2 If the ability to certify and authority to approve are combined in one person, one signature only is necessary; otherwise the approving officer will sign in the space provided, over his official title.

3 When a voucher is receipted in the name of a company or corporation, the name of the person writing the company or corporate name, as well as the capacity in which he signs, must appear. For example: "John Doe Company, per John Smith, Secretary", or "Treasurer", as the case may be.

PER

TITLE

Contract FH-2515

	<u>Cost</u>	<u>Fee</u>	
CPFF Booked Cost	1,590,713.17		
Less Disallowances	<u>988.95</u>		
CPFF Approved Cost	1,589,724.22		
Less Write Off	<u>121,471.22</u>		
Funded	1,468,253.00		
Less Billing 1-13-70	<u>1,339,838.62</u>		
			128,414.38
Fixed Fee Booked		82,035.00	
Less Billing 1-13-70		<u>62,623.75</u>	
			<u>19,411.25</u> 147,825.63
T&M Booked Cost	146,740.82		
Less Write Off	<u>19,740.82</u>		
T&M Funded Cost	127,000.00		
Less Billing 1-13-70	<u>44,531.48</u>		<u>82,468.52</u>
Amount Due This Billing			<u>230,294.15</u>
Less Amount Collected on F.P. Portion			<u>1,708.00</u>
Total Amount Collectible			228,586.15

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IDEA-0237-69

Copy 1 of 6

Contract No. FH-2515

Amendment No. 13

4 APR 1969

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. EXHIBIT "A" to the Schedule of Basic Contract No. FH-2515 sets forth the basic Scope of Work to be performed under this contract. This Scope of Work was subsequently amended by Amendment Nos. 1 through 12 to provide for additional items of work and extension of date of completion.

3. Through Amendment No. 12 there has been allotted to this contract a total amount of \$1,672,045. Of this total \$1,506,045 is on a Cost Plus Fixed Fee basis, \$127,000 is on a Time and Material basis, and \$39,000 on a Fixed Fee basis.

4. By this Amendment No. 13 the Scope of Work is further amended to provide for an increase in scope of work in the amount of \$44,243 including fixed fee as follows:

"Statement of Work"

- A. Prototype No. 1. In accordance with the Contractor's Letter Proposal CJC:68014, dated 12 November 1968, the Contractor shall:
  - 1) Incorporate Two Hit/One Miss Logic
  - 2) Provide for Thermal Testing of Cantilever Mount.
- B. Prototype No. 2 shall be retrofitted in accordance with Contractor's Letter Proposals CJC:68013A, dated 4 December 1968 and CJC:69001, dated 20 January 1969 including:
  - 1) Conversion to New Interface Design
  - 2) Incorporating Two Hit/One Miss Logic

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- 3) Incorporating Line Drivers(Emitter Follower)
- 4) Incorporating Thermal Cut-Out
- 5) Cantilever Pod Modification
- 6) Reconfiguration

The above mentioned Letter Proposals are incorporated herein by this reference."

5. As a result of the above the funds allotted to this contract are increased by \$44,243 to a new total of \$1,716,288 of which \$1,550,288 are on a Cost Plus Fixed Fee basis, \$127,000 on a Time and Material basis, and \$39,000 on a Fixed Price basis. Accordingly PART III of the Schedule to the contract is hereby deleted and the following substituted therefor:

**"PART III - ALLOWABLE COST AND FIXED FEE**

A. The allowable costs to the Government for the performance of this contract is increased by \$41,438 to a new total of \$1,468,253. It is recognized that work previously authorized under this contract was subject to a cost ceiling not to exceed \$1,426,815. The said ceiling, however, shall not apply to new scope effort added by this Amendment No. 13. Accordingly allowable costs to the Government for work contracted for prior to this Amendment No. 13 shall not exceed \$1,426,815 (exclusive of the \$127,000 provided for work to be performed on a Time and Material basis and the \$39,000 for work to be performed on a Fixed Price basis). Notwithstanding the 'Limitation of Cost' clause or other clauses herein to the contrary, it is agreed by the parties hereto that if the Contractor is unable to complete the contract within the limited funds of \$1,426,815 the contractor shall continue the work required hereunder at his own expense. However, should unforeseen technical complications arise that would cause the Contractor to continue work for a prolonged period of time and/or place an unreasonable burden on the Contractor, the Government shall be notified and a mutual decision made to either relieve the Contractor partially or fully with penalty of his responsibility to satisfactorily complete the contract or to amend the contract to provide additional funding as may be agreed to.

B. The Fixed Fee for the Cost Plus Fixed Fee portion of this contract is increased by \$2,805 to a new total of \$82,035."

CLONE!

6. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

7. Please indicate your receipt and acceptance of this Amendment No. 13 to Contract No. FH-2515 by executing the original and two copies hereof. Return the original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

ACKNOWLEDGED AND ACCEPTED  
AEROJET-GENERAL CORPORATION

BY

TIT

DATE

4/18/69

Contracting Officer

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Sanitized Copy Approved for Release 2010/05/05 : CIA-RDP72B00464R000100070014-3

*Doc # 277-D*

IDEA-0060-69

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Contract No. FH-2515

Amendment No. 12

10 FEB 1969

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. EXHIBIT "A" to the Schedule of Basic Contract No. FH-2515 sets forth the basic Scope of Work to be performed under this contract. This Scope of Work was subsequently amended by Amendment Nos. 1 through 11 to provide for additional items of work and extension of date of completion.

3. Through Amendment No. 11 there has been allotted to this contract a total amount of \$1,662,045. Of this amount \$1,506,045 is on a Cost Plus Fixed Fee basis, \$117,000 is on a Time and Material basis, and \$39,000 on a Fixed Price basis.

4. It is mutually agreed that this contract is amended as follows:

A. The Time and Material rates as provided in paragraph 6 of Amendment No. 2 are hereby deleted and the following is substituted therefor:

"Time and Material Rates

1. Effective for the period 1 January 1969 through 30 June 1969 the Contractor agrees to provide Field Support, reduction of flight test data and similar tasks assigned by the Contracting Officer on a Time and Material basis in accordance with the following rates.

2. Labor:

<u>Category</u>	<u>Hourly Rate</u>
(A) Out Plant	
Salaried Employee	\$22.58
Hourly Employee	13.06

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SEC. CL.		ORIGIN		CONTROL NO.	
8		CMD/OSA		IDEA-0060-69	
DATE OF DOC	DATE REC'D	DATE OUT	SUSPENSE DATE	CROSS REFERENCE OR POINT OF FILING	
TO Aerojet-Gen/Azusa, Calif.				1	
FROM Contracting Officer					
SUBJ. Adt 12 to FH-2515					
CMD/OSA/DDS&T/					
Distribution:					
H/C					
2/10/69					
1 - CMD/OSA					
2 - Contractor					
3 - B&FD/OSA					
4 -					
5 -					
				25-69	
COURIER NO.		ANSWERED		NO REPLY	
				2	

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(Note: Contractor agrees not to use actual salaries of Engineers and Technicians in above category in computing Departmental Average Rate).

(B) In Plant	
Salaried Employee	\$18.81
Hourly Employee	11.91

3. Materials:

Materials shall be priced at Direct Material Cost multiplied by a 1.11 factor.

4. Travel:

Travel shall be at cost.

B. The Scope of Work is further amended to provide for continued field test support for operation of the System 20 prototype on a Time and Material basis at a total additional cost of \$10,000."

5. In consideration of the above the funds allotted to this contract are increased by \$10,000 to a new total of \$1,672,045 of which \$1,506,045 are on a Cost Plus Fixed Fee basis, \$127,000 on a Time and Material basis and \$39,000 on a Fixed Price basis. Accordingly PART III of the Schedule to the contract is hereby deleted and the following substituted therefor:

"PART III - ALLOWABLE COST AND FIXED FEE

A. The allowable costs to the Government for the performance of this contract shall not exceed \$1,426,815 (exclusive of the \$127,000 provided for work to be performed on a Time and Material basis and the \$39,000 for work to be performed on a Fixed Price basis). Notwithstanding the 'Limitation of Cost' clause or other clauses herein to the contrary, it is agreed by the parties hereto that if the Contractor is unable to complete the contract within the limited funds of \$1,426,815 the contractor shall continue the work required hereunder at his own expense. However, should unforeseen technical complications arise that would cause the Contractor to continue work for a prolonged period of time and/or place an unreasonable burden on the Contractor, the Government shall be so notified and a mutual decision made to either relieve the Contractor partially or fully without penalty, of his responsibility to satisfactorily complete the contract or to amend the contract to provide additional funding as may be agreed to.

B. The Fixed Fee for the Cost Plus Fixed Fee portion of this contract is \$79,230."

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6. It is further agreed that in consideration of the foregoing that PART II - DELIVERY is further amended by extending the completion date from "31 December 1968" to "30 June 1969", unless such time is extended by the Contracting Officer.

7. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

8. Please indicate your receipt and acceptance of this Amendment No. 12 to Contract FH-2515 by executing the original and two copies hereof. Return the original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

[Redacted Signature]

Contracting Officer

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ACKNOWLEDGED AND ACCEPTED  
AEROJET-GENERAL CORPORATION

BY

[Redacted Signature]

TITLE mgr.

DATE 11 Feb. 1969

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IDEA-0489-68

Copy 1 of 5

Contract No. FH-2515

Amendment No. 11

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

27 JUN 1968

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. EXHIBIT "A" to the Schedule of Basic Contract No. FH-2515 sets forth the basic Scope of Work to be performed under this contract. This Scope of Work was subsequently amended by Amendments Nos. 1 through 10 to provide for additional items of work and extension of date of completion.

3. Through Amendment No. 10 there has been allotted to this contract a total amount of \$1,587,045. Of this amount \$1,431,045 is on a Cost Plus Fixed Fee basis, \$117,000 is on a Time and Material basis, and \$39,000 on a Fixed Price basis.

4. By this Amendment No. 11, the Scope of Work is further amended to provide for the following increase in scope in the amount of \$75,000 on a Cost Plus Fixed Fee basis including fixed fee of 8%:

"Statement of Work"

The Contractor agrees to supply personnel, facilities, and material to perform the following delineated tasks:

A. Investigations, analyses, drawings, and reports as follows:

- (1) Cantilever pod design
- (2) Mechanical - thermal test plan
- (3) Roll stabilization investigation
- (4) Weight and power estimate (including computer)

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- (5) Drop-out logic investigation
- (6) System noise evaluation
- (7) Reconfigure System #2 to be same as #1
- (8) Line drive evaluation (common amp, bar 1, up limit)
- (9) Angle gate re-evaluation.

B. Mechanical - Thermal flight mock-up as follows:

- (1) Design - Complete design changes as required to conform thermal pod to cantilever configuration. This design will be coordinated with vehicle personnel.
- (2) Fabricate and Instrumentation - The existing thermal test pod will be modified to comply with the new cantilever design and provide a mechanical-thermal test unit. The test pod will contain loads to represent the W80 weight and power distribution and shall be instrumented to measure temperature and vibration during test flights. As a minimum, temperature sensors shall measure telescope, detector and skin temperatures and vibration data shall be taken for at least three different locations.
- (3) Interface - The mechanical-thermal test pod shall be interfaced with the test bed vehicle. Accelerometers and thermal sensors shall be specified along with required instrumentation amplifiers and recording devices.
- (4) Flight Test Report - Upon conclusion of two or three flight tests (conducted as T&M), the flight test data will be reduced and submitted as an informal report.

C. Fabrication and assembly of two cantilever pods. The new pods will be fabricated and assembled to the new cantilever design. These pods are to contain the two developmental units in the final cantilever form."

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5. As a result of the above the funds allotted to this contract are increased by \$75,000 to a new total of \$1,662,045 of which \$1,506,045 are on a Cost Plus Fixed Fee basis, \$117,000 on a Time and Material and \$39,000 on a Fixed Price basis. Accordingly PART III of the Schedule to the contract is hereby deleted and the following substituted therefor:

**"PART III - ALLOWABLE COST AND FIXED FEE**

A. The allowable costs to the Government for the performance of this contract shall not exceed \$1,426,815 (exclusive of the \$117,000 provided for work to be performed on a Time and Material basis and the \$39,000 for work to be performed on a Fixed Price basis). Notwithstanding the 'Limitation of Cost' clause or other clauses herein to the contrary, it is agreed by the parties hereto that if the Contractor is unable to complete the contract within the limited funds of \$1,426,815 the contractor shall continue the work required hereunder at his own expense. However, should unforeseen technical complications arise that would cause the Contractor to continue work for a prolonged period of time and/or place an unreasonable burden on the Contractor, the Government shall be so notified and a mutual decision made to either relieve the Contractor partially or fully without penalty, of his responsibility to satisfactorily complete the contract or to amend the contract to provide additional funding as may be agreed to.

B. The Fixed Fee for the performance of this contract is \$79,230."

6. It is further agreed that in consideration of the foregoing that PART II - DELIVERY is further amended by extending the completion date from "30 June 1968" to 31 December 1968", unless such time is extended by the Contracting Officer.

7. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

8. Please indicate your receipt and acceptance of this Amendment No. 11 to Contract FH-2515 by executing the original and two copies hereof. Return the original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

ACKNOWLEDGED AND ACCEPTED  
AEROJET-GENERAL CORPORATION

BY

TITLE

DATE 5 July 1968

Contracting Officer

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Copy 1 of 5

Contract No. FH-2515

Amendment No. 10

30 APR 1968

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. EXHIBIT "A" to the Schedule of Basic Contract No. FH-2515 sets forth the basic Scope of Work to be performed under this contract. This Scope of Work was subsequently amended by Amendments Nos. 1 through 9 to provide for additional items of work and extension of date of completion.

3. Through Amendment No. 9 there had been allotted to this contract a total amount of \$1,527,045. Of this amount \$1,431,045 was on a Cost Plus Fixed Fee basis, \$57,000 on a Time and Material basis, and \$39,000 on a Fixed Price basis.

4. By this Amendment No. 10, the Scope of Work is further amended to provide for the following work on a time and material basis at a total cost of \$60,000:

"Statement of Work"

For an eight-week period beginning on or about 25 March 1968 and ending on or about 17 May 1968, the contractor shall accomplish the tasks outlined below relative to the W-80C.

A. Conduct a requirements analysis and feasibility study for alternate mounting locations on the vehicle. The effort is to include the following salient points:

(1) Coordination with the air frame manufacture in assessing new mounting locations.

(2) Analyze mechanical and thermal requirements relative to proposed mounting locations.

(3) Analyze and determine the feasibility of cantilever type mounting.

**SECRET**

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Page 2

(4) Analyze and determine requirements and feasibility for detector and optics cooling for proposed mounting locations.

(5) Determine feasibility and design for a mechanical and thermal pod mockup for flight testing.

B. Conduct a feasibility study and prepare a preliminary design for a rate discrimination logic system.

C. Provide field test support on a time and materials basis for testing the W-80C at the General Dynamics facility.

D. Make necessary preparations for system production to include the following:

(1) Update drawings, not affected by the effort contained in item A above.

(2) Prepare production procurement specifications.

(3) Prepare a detailed parts list.

(4) Vendor selection and production planning.

5. As a result of the above the funds allotted to this contract are increased by \$60,000 to \$1,587,045 of which \$1,431,045 are on a Cost Plus Fixed Fee basis, \$117,000 on a Time and Material basis and \$39,000 on a Fixed Price basis. Accordingly PART III of the Schedule to the contract is hereby deleted and the following substituted therefor:

PART III - ALLOWABLE COST AND FIXED FEE

A. The allowable costs to the Government for the performance of this contract shall not exceed \$1,357,370 (exclusive of the \$117,000 provided herein for work to be performed on a Time and Material basis and the \$39,000 for work to be performed on a Fixed Price basis). Notwithstanding the 'Limitation of Cost' clause or other clauses herein to the contrary, it is agreed by the parties hereto that if the Contractor is unable to complete the contract within the limited funds of \$1,357,370 the contractor shall continue the work required hereunder at his own expense. However, should unforeseen technical complications arise that would cause the

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Page 3

the Contractor to continue work for a prolonged period of time and/or place an unreasonable burden on the Contractor, the Government shall be so notified and a mutual decision made to either relieve the Contractor partially or fully without penalty, of his responsibility to satisfactorily complete the contract or to amend the contract to provide additional funding as may be agreed to.

B. The Fixed Fee for the performance of this contract is \$73,675."

6. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

7. Please indicate your receipt and acceptance of this Amendment No. 10 to Contract FH-2515 by executing the original and two copies hereof. Return the original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

[Redacted Signature Box]

Contracting Officer

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ACKNOWLEDGED AND ACCEPTED  
AEROJET-GENERAL CORPORATION

BY

TITLE

[Redacted Signature Box]

DATE 10 June 1968

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Copy 1 of 5

Contract No. FH-2515  
Amendment No. 9

6 FEB 1968

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. EXHIBIT "A" to the Schedule of Basic Contract No. FH-2515 sets forth the basic Scope of Work to be performed under this contract. This Scope of Work was subsequently amended by Amendments Nos. 1 through 7 to provide for additional items of work and extension of date of completion.

3. Through Amendment No. 7 there had been allotted to this contract a total amount of \$1,497,045.00. Of this amount \$1,431,045.00 was on a Cost Plus Fixed Fee basis, \$27,000.00 on a Time and Material basis, and \$39,000.00 on a Fixed Price basis.

4. By this Amendment No. 9, the Scope of Work is further amended to provide for the following work submitted by Contractor's Proposal CJC:68001, incorporated herein by this reference, said work to be performed on a Time and Material basis at a total cost of \$30,000.00:

- a) Repair of Prototype Unit #1
- b) Data Reduction & Analysis
- c) Spare IR Dome Assembly

Note: Total cost of items a, b, and c above not to exceed \$14,973.00 without prior approval of Contracting Officer.

- d) Balance of \$30,000.00 to be applied toward future flight test support and data reduction.

5. As a result of the above the funds allotted to this contract are increased by \$30,000.00 to \$1,527,045, of which \$1,431,045.00 are on a Cost Plus Fixed Fee basis, \$57,000.00 on a Time and Material basis, and \$39,000.00 on a Fixed Price basis. Accordingly PART III of the Schedule to the contract is hereby deleted and the following substituted therefor:

"PART III - ALLOWABLE COST AND FIXED FEE

A. The allowable costs to the Government for the performance of this contract shall not exceed \$1,357,370.00 (exclusive of the \$57,000.00 provided herein for work to be performed on a Time and Material basis

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and the \$39,000.00 for work to be performed on a Fixed Price basis). Notwithstanding the 'Limitation of Cost' clause or other clauses herein to the contrary, it is agreed by the parties hereto that if the Contractor is unable to complete the contract within the limited funds of \$1,357,370.00 the Contractor shall continue the work required hereunder at his own expense. However, should unforeseen technical complications arise that would cause the Contractor to continue work for a prolonged period of time and/ or place an unreasonable burden on the Contractor, the Government shall be so notified and a mutual decision made to either relieve the Contractor partially or fully without penalty, of his responsibility to satisfactorily complete the contract or to amend the contract to provide additional funding as may be agreed to.

B. The Fixed Fee for the performance of this contract is \$73,675.00."

6. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

7. Please indicate your receipt and acceptance of this Amendment No. 9 to Contract FH-2515 by executing the original and two copies hereof. Return the original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

[Redacted Signature]

Contracting Officer

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ACKNOWLEDGED AND ACCEPTED  
AEROJET-GENERAL CORPORATION

BY

TITLE

DATE 21 February 1968

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Copy 1 of 5

Contract No. FH-2515  
Amendment No. 8

30 OCT 1967

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. PART II - DELIVERY, is hereby amended and the following substituted therefor:

"The work to be performed under this contract should be completed on or before 30 June 1968, unless such time is extended by the Contracting Officer."

3. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

4. Please indicate your receipt and acceptance of this Amendment No. 8 to Contract FH-2515 by executing the original and two copies hereof. Return the original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

[Redacted Signature]

Contracting Officer

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ACKNOWLEDGED AND ACCEPTED  
Aerojet-General Corporation

BY \_\_\_\_\_

TITLE \_\_\_\_\_

DATE 11-15-67

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Copy 2 of 2

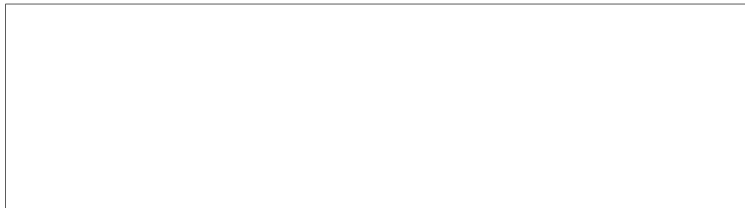
*Series B*

18 October 1967

MEMORANDUM FOR THE RECORD

SUBJECT: Acceptance Testing of System 20, 11-15 October 1967

1. Acceptance testing of the first prototype System 20 was carried out at Aerojet General Corporation during the period of 11 October through 15 October 1967. The following personnel were in attendance:



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This unit was configured with discrete type modules.

2. The testing which was carried out was successful and acceptable; however, it is my opinion that the testing did not directly demonstrate full compliance with the procurement specification. Specifically the portions of the procurement specification dealing with system availability after primary power turn on and system sensitivity and background rejection were not demonstrated directly. The reasons given for this were that they could not control the black body at the low temperatures, they did not have a neutral density filter, and they did not have a radiometer available.

3. Indirect measurements of the system availability and sensitivity indicate the unit to be acceptable.

4. Summary: The unit as configured appears to comply with the specification. Ninety-five percent of the detectors/channels are operational.



BYE-75619/67

Page 2

The unit was tested at temperatures as low as minus (-) 117 degrees F and at pressures as low as 30 mm of Hg. The unit will be delivered to Lockheed on 18 October 1967 for flight test configuration.

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C/SSB/ASD/OEL

Distribution:

Cy 1 - ASD/OEL

2 - ASD Chrono.

3 - OEL Reg.

CCDeWitt:bt:7671

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Copy 1 of 5

Contract No. FH-2515

Amendment No. 7

15 SEP 1967

Aerojet-General Corporation  
Con Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. EXHIBIT "A" to the Schedule of Basic Contract No. FH-2515 sets forth the basic Scope of Work to be performed under this contract. This Scope of Work was subsequently amended by Amendments Nos. 1 through 6 to provide for additional items of work.

3. Through Amendment No. 6 there had been allotted to this contract a total amount of \$1,312,045.00. Of this amount \$1,246,045.00 was on a Cost Plus Fixed Fee basis, \$27,000.00 on a Time and Material basis, and \$39,000.00 on a Fixed Price basis.

4. By this Amendment No. 7, the Scope of Work of Contract No. FH-2515 is further amended to add thereto the requirement as set forth in the attached "Added Scope for Design and Fabrication of Discrete Circuits."

5. As a result of the above, the funds allotted to this contract are increased by \$185,000.00 to \$1,497,045.00, of which \$1,431,045.00 are on a Cost Plus Fixed Fee basis, \$27,000.00 on a Time and Material basis, and \$39,000.00 on a Fixed Price basis. Therefore PART III of the Schedule to the Contract is hereby deleted and the following substituted therefor:

"PART III - ALLOWABLE COST AND FIXED FEE

A. The allowable costs to the Government for the performance of this contract shall not exceed \$1,357,370.00 (exclusive of the \$27,000.00 provided herein for work to be performed on a Time and Material basis and the \$39,000.00 for work to be performed on a Fixed Price basis). Notwithstanding the 'Limitation of Cost' clause or other clauses herein to the contrary, it is agreed by the parties hereto that if the Contractor is unable to complete the contract within the limited funds of \$1,357,370.00, the Contractor shall continue the work required hereunder at his own expense. However, should unforeseen technical complications arise that would cause

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the Contractor to continue work for a prolonged period of time and/or place an unreasonable burden on the Contractor, the Government shall be so notified and a mutual decision made to either relieve the Contractor partially or fully without penalty, of his responsibility to satisfactorily complete the contract or to amend the contract to provide additional funding as may be agreed to.

B. The Fixed Fee for the performance of this contract is \$73,675.00."

6. The work to be performed under this contract should be completed on or before 31 December 1968, unless such time is extended by the Contracting Officer. Irrespective of the completion date stated, the Contractor is expected to exert every effort to meet the schedule as set forth in the Attachment to this Amendment No. 7.

7. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

8. Please indicate your receipt and acceptance of this Amendment No. 7 to Contract FH-2515 by executing the original and two copies hereof. Return the original and one copy to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

[Redacted Signature Box]

Contracting Officer

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ACKNOWLEDGED AND ACCEPTED  
AEROJET-GENERAL CORPORATION

BY

TITLE

DATE 10/4/67

[Redacted Signature Box]

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ATTACHMENT to Amendment 7.

ADDED SCOPE FOR DESIGN AND FABRICATION OF DISCRETE CIRCUITS

Labor material and facilities will be provided to design, test, and manufacture two hundred and twenty (220) analog electronic modules for use in two W80-C Infrared Systems. The design of these modules will use available discrete components and be such that may be used directly in available card holding fixtures. The card plug-in boards utilize amphenol type 64-15 plugs spaced at one-quarter inch intervals.

The module configuration and performance will comply with the requirements of "Specification for Passive IR Warning Device (W80-C)," approved 10 January 1967. In addition, the design concept is set forth in the "Detailed Subsystem Specification" (Appendix A of the W80-C Design Concept Report). Monthly progress will be presented as a portion of the W80-C System Monthly Reports.

DELIVERY SCHEDULE

- |                         |                   |
|-------------------------|-------------------|
| 1. Complete 110 Modules | 15 September 1967 |
| 2. Complete 110 Modules | 2 October 1967    |
| (Total 220 Modules)     |                   |

This added scope does not relieve the Contractor from delivering a quantity of 220 thin film analog electronic modules (DIPS) as per original agreement. Contractor shall submit a delivery schedule for this equipment.

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Copy 1 of 4

Contract No. FH-2515

Amendment No. 6

28 JUN 1967

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto as of 28 October 1965, as subsequently amended.
2. By this Amendment No. 6 the Scope of Work of Contract No. FH-2515 is hereby amended to add thereto the requirement as set forth in the attachment entitled "Work Statement for W80C and Elevation Encoder and Servo Retrofit."
3. The above added effort shall be accomplished on a fixed price basis and accounted for under a separate internal work order established therefor by the Contractor; and the funds agreed to and provided hereunder shall be expended only for this added effort.
4. Upon satisfactory completion of the above effort the Contractor shall be paid a fixed price amount of \$39,000 with payment to be made upon submission of an invoice accompanied by a DD-250 or similar receiving document.
5. As a result of the above the funds allotted to this contract are increased by \$39,000 to \$1,312,045 of which \$1,246,045 are on a cost plus fixed fee basis; \$27,000 on a T & M basis; and \$39,000 on a fixed price basis.
6. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.
7. Please indicate your receipt and acceptance of this Amendment No. 6 to Contract FH-2515 by executing the original and three copies hereof. Return the original and two copies to the undersigned and retain the remaining copy for your files.

Very truly yours,

THE UNITED STATES OF AMERICA

ACKNOWLEDGED AND ACCEPTED  
Aerojet-General Corporation

BY \_\_\_\_\_

TITLE \_\_\_\_\_

DATE 24 August 1967

Contracting Officer

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ADDED SCOPE

Page 1 of 1

WORK STATEMENT FOR W80C AND ELEVATION ENCODER AND SERVO RETROFIT

Facilities labor and material shall be provided to redesign and retrofit two (2) Model W80C Infrared Systems for target elevation position encoding. Position encoding requirements are set forth in CJC:67009, Target Angle Rate Computer Proposal (Phase A). As stated therein elevation encoding may be accomplished realistically by one of two approaches. First, a gimbal shaft, tachometer and encoder design may be employed to provide the required outputs; or, if space does not permit, an encoder may be mounted on the elevation gimbal and the encoder output processed to derive a digital controlled rate servo.

The elevation and servo design and retrofit shall include the following: elevation encoder design and retrofit, tachometer-servo redesign as necessary, system cable changes and power supply modifications to assure the present operational capability and final tests on all retrofitted portions.

Packaging, reliability and environmental requirements will be compatible with that specified in the W80C System Specification document dated 10 January 1967.

The above work will be accomplished as near as possible on a non-interference basis with design and retrofit work now in process on the two W80C Systems.

This added effort shall be accomplished within 90 days after completion of the W80C Systems under this contract.

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IDEA-0208-67  
Copy 1 of 5

Contract No. FH-2515  
Amendment No. 5

2 MAR 1967

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Reference is made to Contract No. FH-2515 executed by the parties hereto 28 October 1965, as subsequently amended.

2. EXHIBIT "A" to the Schedule of basic Contract No. FH-2515 sets forth the basic Scope of Work to be performed under this Contract. This Scope of Work was subsequently amended by Amendments Nos. 1 through 4 to provide for additional items of work as set forth therein.

3. Through Amendment No. 4 there had been allotted to this Contract a total amount of \$896,045.00. Of this amount \$869,045.00 was on a cost plus fixed fee basis and \$27,000.00 on a Time and Material basis.

4. By this Amendment No. 5, the Scope of Work is further amended to incorporate "SPECIFICATION FOR PASSIVE IR WARNING DEVICE (W-80C)," dated 10 January 1967 and Contractor's "STATEMENT OF WORK - W80C RETROFIT PROGRAM," dated 19 January 1967, both of which are attached hereto together with mutually agreed to revisions. Deviations to the above Specifications may be made by mutual agreement and approved in writing by the authorized technical representative of the Contracting Officer.

5. As a result of the above, the funds allotted to this Contract are increased by \$377,000.00 to \$1,273,045.00, of which \$1,246,045.00 are on a cost plus fixed fee basis and \$27,000 on a Time and Material basis. Therefore PART III of the Schedule to the Contract is hereby deleted and the following substituted therefor.

"PART III - ALLOWABLE COST AND FIXED FEE

A. The allowable costs to the Government for the performance of this Contract shall not exceed \$1,182,021.00 (exclusive of the \$27,000.00 provided herein for work to be performed on a Time and Material basis). Notwithstanding the 'Limitation of Cost' clause or other clauses herein to the contrary, it is agreed by the

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Contract FH-2515  
Amendment No. 5  
Page 2

parties hereto that if the Contractor is unable to complete the contract within the limited funds of \$1,182,021.00 the Contractor shall continue the work required hereunder at his own expense. However, should unforeseen technical complications arise that would cause the Contractor to continue work for a prolonged period of time and/or place an unreasonable burden on the Contractor, the Government shall be so notified and a mutual decision made to either relieve the Contractor, partially or fully without penalty, of his responsibility to satisfactorily complete the contract or to amend the contract to provide additional funding as may be agreed to. The notification shall be made when it is determined that the Contractor will have to expend its own funds in an amount in excess of \$150,000.00 of the \$491,000.00 added to this Contract No. FH-2515 and to Contract No. FH-2510 as follows:

Funds added by this Amendment No. 5 to Contract No. FH-2515	\$377,000.00
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Funds added by Amendment No. 5 to Contract No. FH-2510	\$114,000.00
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B. The Fixed Fee for the performance of this Contract is \$64,024.00."

6. The work to be performed under this contract should be completed on or before 1 November 1967, unless such time is extended by the Contracting Officer.

7. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

8. Please indicate your receipt and acceptance of this Amendment No. 5 to Contract FH-2515 by executing the original and three copies hereof. Return the original and two copies to the undersigned and retain the remaining copy for your files.

AEROJET-GENERAL CORPORATION

BY \_\_\_\_\_

TITLE \_\_\_\_\_

DATE 15 March 1967

THE UNITED STATES OF AMERICA

BY \_\_\_\_\_

TITLE Contracting Officer

25X11

~~SECRET~~

**SECRET**

SPECIFICATION  
FOR  
PASSIVE IR WARNING DEVICE  
(W-80C)

CONCUR:



Customer

Date

Contractor

Date

25X1

**SECRET**

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## SPECIFICATION

### PASSIVE IR WARNING DEVICE (W-80C)

#### 1. SCOPE

1.1. General: The purpose of this specification is to define a system which provides the defended aircraft pilot with visual and audio warning when a hostile aircraft is in an attack position. The system shall use a large array of detectors which detects energy in the three (3) micron region. The attacking aircraft shall be assumed to operate with afterburner.

#### 1.2. Modes of Operation

##### 1.2.1. Test Modes

##### 1.2.1.1. In-Flight Test (IFTS)

##### 1.2.1.2. Flight Line Test

##### 1.2.1.3. Bench/Maintenance Test

##### 1.2.2. Detection Modes

##### 1.2.2.1. Target Detection

##### 1.2.2.2. Solar Detection (Inhibit Mode)

#### 2. APPLICABLE DOCUMENTS

2.1. The issues of the following documents in effect on date of invitation for bids shall be used as guidelines in the development of the equipment covered by this specification, except for those documents or portions thereof which are specifically invoked herein.

- 2 -

Specifications

MIL-E-5400	Electronic Equipment, Aircraft, General Specification For
MIL-Q-9858	Quality Program Requirements
MIL-F-15733	Filters, Radio Interference
MIL-M-26512	Maintainability Program Require- ments for Aerospace Systems and Equipment
MIL-C-54662	Calibration of Standards

Standards

MIL-STD-280	Definition of Terms for Equip- ment Divisions
MIL-STD-454	Standard General Requirements for Electronic Equipment
MIL-STD-721	Definitions for Reliability Engineering
MIL-STD-756	Reliability Prediction
MIL-STD-826	Electromagnetic Interference Test Requirements and Test Methods

Handbooks

MIL-HDBK-217	Reliability Stress and Failure Rate Data for Electronic Equipment
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3.1. REQUIREMENTS

3.1. General Requirements

3.1.1. Personnel: The system shall be designed in such a manner that personnel participation during operation and in-flight and pre-flight test shall be restricted to one (1) person.  
O.K.

3.1.2. Destruct Considerations: Attention shall be given to those factors which allow for the ease of destruction of security sensitive portions of this system. A destruct system is not a portion of this requirement.  
N/A

3.1.3. Filters: The possible need for filters on power lines, control lines, and signal lines shall be recognized. Such devices, if required, shall be the responsibility of the contractor.  
MAN NEED CHANGE FOR R.

3.1.4. System Protection: Protection of the system from destruction or deterioration by reason of primary power system variations or transients, altitude and temperature shall be the responsibility of the contractor. Automatic cut-out devices shall not be utilized. A warning indicator may be used to alert the operator, if required.  
O.K.

3.1.5. Elapsed Time Device: An elapsed time device having one (1) hour resolution and at least three (3) significant digits shall be provided. This device shall be actuated whenever the primary, AC, power is applied to the system.  
O.K.

3.1.6. In-Flight Test System (IFTS): An IFTS shall be provided which adequately tests and evaluates the system's operational capability. The IFTS shall be initiated by an operator. The operational status of the system shall be displayed by a single "go" indication. Threshold confidence levels, as well as parameters to be used in the IFTS, shall be approved by the customer.  
~~TELESCOPE TEMP~~ probe should be checked on pre-flight. Temp probe can be paralleled for self tests.

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3.1.7.  
*check new  
time.*

System Availability: The system shall be fully operational 25 minutes after the primary power has been turned on.

3.2.

Target Definition: The minimum target irradiance at the telescope's entrance aperture shall be defined as being  $4.7 \times 10^{-12}$  watts/cm<sup>2</sup> effective in the 2.85 through 3.0 micron spectral region.

*2.73 through 2.87*

3.3.

Background Definition: The maximum background apparent irradiance shall be defined as being  $10^{-5}$  watts/cm<sup>2</sup>-ster-micron. This corresponds to  $6 \times 10^{-13}$  watts/cm<sup>2</sup> effective at the telescope's entrance aperture between 2.85 and 3.0 microns.

3.4.

*O.k.*

Spectral Transmission and Atmosphere: The average transmission through a 20 nautical mile ground path distance, with the platform at 70,000 feet and the interceptor at 40,000 feet, shall be defined as 88 percent across the 2.85 through 3.0 micron spectral region.

3.5.

Parametric Requirements

3.5.1.

*O.k.*

Tactical Considerations: The platform shall be assumed to be under attack by an interceptor in a tail chase attack mode. The interceptor shall be assumed to carry armament which may consist of: passive IR homing missiles, ballistic rockets, and guns. The possibility of a collision type attack cannot be neglected. The normal intercept shall consist of a "speed run" at an altitude of not less than 40,000 feet, with afterburner lit. A velocity of approximately mach 1.5 to mach 1.8 will be realized. A snap up, zoom or power climb will be initiated at approximately 17 n.m. ground range, aft of the platform. The "speed run" may be initiated 30-35 n.m. ground range aft of the platform. Once the interceptor is committed to the "snap up," it is nearly ballistic in nature. It may attain a maximum altitude of approximately 75,000 feet during this maneuver. Doctrine dictates the use of two (2) interceptors.

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- 3.5.2. *o.k.* Flight Dynamics
- 3.5.2.1. Platform
- 3.5.2.1.1. Operational Altitude: 67,000 to 73,000 feet
- 3.5.2.1.2. Velocity: Mach 0.68 - 0.72
- 3.5.2.1.3. Maximum Turn Rate: 3 degrees/second
- 3.5.2.1.4. Maximum Bank Angle: 45 degrees
- 3.5.2.1.5. Angle of Attack: Approximately 2.5 degree variation  
(plus (+) two (2) degrees through minus (-) 1/2 degree)
- 3.5.2.2. Interceptor
- 3.5.2.2.1. Operational Altitude: 40,000 to 75,000 feet
- 3.5.2.2. Velocity: Mach 1.2 to Mach 1.8
- 3.5.3. *o.k.* Detection Envelope
- 3.5.3.1. Range, ground: 20 n.m.
- 3.5.3.2. Interceptor Altitude, minimum: 40,000 feet
- 3.5.3.3. Interceptor Altitude, maximum: 75,000 feet
- 3.5.3.4. Platform Altitude, minimum: 67,000 feet
- 3.5.3.5. Platform Altitude, maximum: 73,000 feet
- 3.5.3.6. Platform, Angular Envelope
- 3.5.3.6.1. *may be question now 37.5* Azimuth: Plus (+) 40 through minus (-) 40 degrees
- 3.5.3.6.2. *o.k.* Elevation: Plus (+) 15 through minus (-) 32.5 degrees
- 3.5.4. *o.k.* Probability of Detection: 0.98, worst case condition  
20 n.m. ground range, minimum.

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3.5.5. *hold pending mods + flight tests.* False Alarm Rate: Less than one (1) per eight (8) hours.

3.6. Detailed Equipment Requirements

3.6.1. *OK* Volumetric: The volume occupied by the system shall be defined by the contractor's drawings whose numbers are 197760 (basic) and 197704.

3.6.2. *OK* Weight: 60 pounds maximum, including pod

3.6.3. *OK* Power Consumption: 500 watts, maximum

3.6.4. Primary Power

3.6.4.1. AC Source

3.6.4.1.1. *EMERG GEN WHAT VOLTAGE?* Voltage: 111-123 volts

3.6.4.1.2. *OK* Frequency: 320-480 cps

3.6.4.1.3. *OK* { Three phase, 208/105 volt "wye" connected generator with grounded neutral. Phase rotation ABC. Single phase may be used.

3.6.4.2. *OK* DC Source

3.6.4.2.1. Voltage:  $28 \pm 1.0$  volts

3.6.4.2.2. Ripple: One (1) volt peak to peak

3.6.4.2.3. Overvoltage Protection: None

3.6.5.9. System Control Functions, Cockpit

3.6.5.9.1. *OK* Power: "On"/"Off" switch

3.6.5.9.2. IFTS: Initiate switch

3.6.5.9.3. Audio Warning: "On"/"Off" switch

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3.6.5.10. *OK* System Output Functions, Cockpit

3.6.5.10.1. *OK* Power on indications

3.6.5.10.2. *OK* IFTS: "Go" condition indication

3.6.5.10.3. *DONT HAVE, BUT OK.* Thermal warning indication

3.6.5.10.4. *OK* Target display

3.6.5.10.4.1. *OK* Twelve (12) sectors

3.6.5.10.4.2. See Appendix "A"

3.6.5.10.5. *OK.* Audio Warning Tone: An adjustable voltage level of zero (0) through five (5) volts peak into a 110 ohm load whose frequency is adjustable from 400 through 3,000 cps shall be provided. Nominally the frequency shall be set to 1,000 cps. Level and frequency controls shall be located in the equipment area.

3.6.5.11. System Output Functions, Other

3.6.5.11.1. *OK* Contact closure upon target detection

3.6.5.11.2. Quantity: Two (2) sets, form "A" contacts

3.6.5.11.3. *OK* Contact Rating: 28 volts at 2.0 amperes resistive load ~~OK~~

3.7. Environment

3.7.1. Nonoperating Environment

3.7.1.1. *OK* Altitude: Sea level through 40,000 feet

3.7.1.2. Temperature: Minus (-) 54 degrees through plus (+) 71 degrees centigrade.

3.7.1.3. *OK* Shock: As encountered during military and common carrier land and air transportation.

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3.7.1.4. *OK* Vibration: As encountered during military and common carrier land and air transportation.

3.7.1.5. *↓* Humidity: Up to 100 percent relative humidity, including condensation.

3.7.2. Operating Environment

3.7.2.1. *OK* Altitude: Sea level through 75,000 feet

*pub.* 3.7.2.2. Temperature: Minus (-) 75 degrees through plus (+) 65 degrees centigrade, *BUT WILL NOT HAVE SENSITIVITY BY FORNS UNTIL - 100C.*

3.7.2.3. *OK* Shock: 10 G's in each of three (3) mutually perpendicular axis.

3.7.2.4. *OK* Vibration: As per curve II, figure 5, MIL-E-5400.

3.8. Reliability and Maintainability

3.8.1. *O.K.* MTBF: 1,000 hours, minimum

3.8.2. *D.K.* Ai: 0.997, minimum

3.8.3. *O.K.* Maintainability: While a specific maintainability specification is not invoked, the customer shall carefully evaluate this aspect during review of the design concept and during the scheduled design review. The customer shall provide corrective direction when in his opinion the equipment covered by this specification does not meet minimum maintainability requirements.

4. QUALITY ASSURANCE PROVISIONS

4.1. *O.K.* Categories of Testing

Component Tests  
Subsystem Tests  
System Bench Tests  
Acceptance Tests  
Environment Tests  
Compatibility Tests

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4.2. Test Requirements

4.2.1. *O.K.* General: The customer reserves the right to witness any or all of the tests delineated in paragraph 4.1. During acceptance and environmental testing, the customer or his designated representative, who must be in attendance, shall be solely responsible for making retest, repair, and replacement decisions should equipment fail or malfunction during the test program. Deviation to this provision shall not be granted.

4.2.2. Environmental Testing

4.2.2.1. Burn In: A minimum burn in period, with the system in an operate condition, of forty-eight (48) hours shall be completed before initiation of the test program. The last sixteen (16) hours of the burn in period shall be failure free. Burn in may be at room ambient.

4.2.2.2. Combined Altitude and Temperature: Five (5) eight (8) hour cycles at 70,000 ft. and minus (-) 54 degrees centigrade. The equipment shall be allowed to stabilize to room ambient between cycles. Two (2) eight (8) hour cycles at ~~70,000 ft.~~ <sup>SEA LEVEL</sup> and plus ~~(4) 30~~ <sup>41</sup> degrees centigrade. The equipment shall be allowed to stabilize to room ambient between cycles. ~~The J-218~~ cooling system shall be utilized during this test phase. One (1) of the high temperature test sequences shall include a low frequency and high primary power source test. Equipment shall be operating during these tests.

4.2.2.3. Vibration: Two (2) hours in each axis as per curve II of figure 5 of MIL-E-5400.

4.2.2.4. Shock: Eighteen (18) shocks each axis at 10 G for plus (+) or minus (-) eleven milliseconds per MIL-E-5400.

4.2.3. Compatibility Testing: After acceptance of the warning device, the adequacy of the "J-218 Test Set" shall be demonstrated. *TEST CART WILL BE RUN IN 110° Amb.*

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5. PREPARATION FOR DELIVERY

- 5.1. *OK* The equipment shall be packaged in containers which are adequate for transportation of the equipment by the following modes of transportation:

Land	-	common carrier
Air	-	common carrier
Air	-	military

Packing for the prototype equipment shall be designed for domestic shipment.

6. NOTES

- 6.1. During the development effort, careful attention shall be given to the utilization of standard parts. All parts used shall be available for production and/or spare parts.

- 6.2. *OK out* Specific attention shall be given to the allocation of space for "tracker target designation devices." The tracker and the designation device do not form a part of this specification; however, they may be incorporated on a retrofit basis.

- 6.3. *OK* In addition to the provisions of paragraph 4., the customer shall additionally test either or all prototypes in the following manner:

6.3.1. Simulator Testing

6.3.2. Flight Testing, Background

6.3.3. Flight Testing, Target Detection

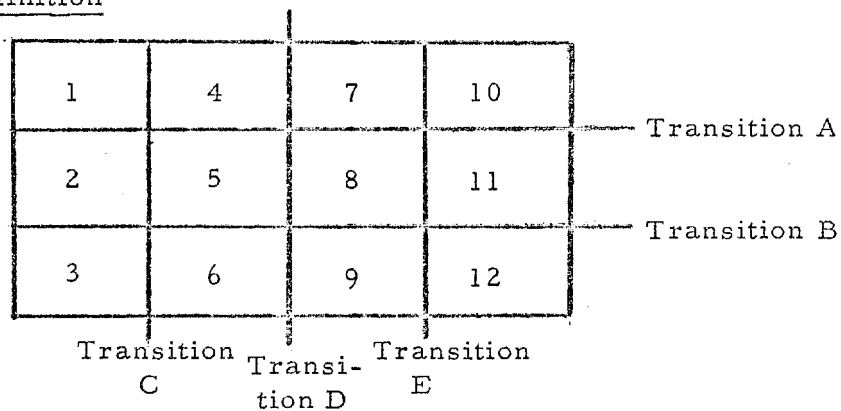
- 6.4. *OK* The design and fabrication of necessary IR domes and equipment pods are specifically a portion of this requirement.

2. 6.5. Units fabricated in production shall be identical, in every respect, to the prototype units. This requirement is not waverable.



## APPENDIX A

## DISPLAY/SECTOR DETAIL

1. Sector Definition

<u>Sector Number</u>	<u>Azimuth (Nominal)</u>	<u>Elevation (Nominal)</u>
1	-40 through -10 degrees	+15 through -12 degrees
2	-40 through -10 degrees	-12 through -20 degrees
3	-40 through -10 degrees	-20 through -32.5 degrees
4	-10 through 0 degrees	+15 through -12 degrees
5	-10 through 0 degrees	-12 through -20 degrees
6	-10 through 0 degrees	-20 through -32.5 degrees
7	0 through +10 degrees	+15 through -12 degrees
8	0 through +10 degrees	-12 through -20 degrees
9	0 through +10 degrees	-20 through -32.5 degrees
10	+10 through +40 degrees	+15 through -12 degrees
11	+10 through +40 degrees	-12 through -20 degrees
12	+10 through +40 degrees	-20 through -32.5 degrees

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2. Zero (0) Degree Reference

- 2.1. Zero (0) degrees elevation is referenced to the plane of the platforms "waterline" under cruise conditions.
- 2.2. Zero(0) degrees azimuth is referenced to the plane which intersects the platform waterline and which is perpendicular to the earth while the platform is under cruise conditions.

3. Elevation Transition Adjustment Range

- 3.1. Transition A shall be adjustable from the nominal value of -12 degrees, referenced in paragraph 1, by +5 and -10 degrees.
- 3.2. Transition B. shall be adjustable from the nominal value of -20 degrees, referenced in paragraph 1, by +5 and -5 degrees.

4. Azimuth Transition Adjustment Range

- 4.1. Transition D, referenced in paragraph 1, shall be fixed at zero (0) degrees.
- 4.2. Transition C, referenced in paragraph 1, shall be adjustable by +5 degrees and -10 degrees from the nominal value.
- 4.3. Transition E, referenced in paragraph 1, shall be adjustable by +10 degrees and -5 degrees from the nominal value.
- 4.4. Azimuth transitions shall be adjustable to the nearest azimuth bar within the range specified.

5. Target Transition Requirements

- 5.1. The transition of the displayed target in any display sector to any adjoining display sector shall not require the revalidation of the target.
- 5.2. The residual display of a single target when that single target undergoes a transition from one display sector to an adjoining display sector shall not be permitted.

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6. Lamp Driver Requirements

- 6.1. The outputs of all lamp drivers, if utilized, shall be provided with isolation devices. The intent of this requirement is to provide the capability of implementing either:
  - 6.1.1. a twelve (12) sector display
  - 6.1.2. a nine (9) sector display
  - 6.1.3. a six (6) sector display, or
  - 6.1.4. a three (3) sector display.

APPENDIX B

DOCUMENTATION/MANAGEMENT

1. DOCUMENTATION

1.1. Quantity: Unless otherwise specified, a quantity of two (2) each documents shall be furnished the customer.

1.2. Monthly Report - Progress: The monthly report shall include, but shall not necessarily be limited to, the following categories of information:

- Subsystems Status
- System Status
- Interface Status
- Procurement Status
- Fabrication Status
- Assembly Status
- Pertinent Analytic or Test Results
- Technical Conference Notes, if liaison with  
any of the customer's associate contractors  
has taken place.
- Problem Areas

1.3. Monthly Report - Manpower and Financial

- Planned manpower utilization vs. actual
- Planned expenditures (by category) vs. actual
- Charges by activity

1.4. Program Plan: A program plan, in a quantity of three (3), shall be submitted to the customer for approval within two (2) weeks after the award of the contract. Failure of the contractor to comply with this provision shall constitute sufficient reason for the customer to suspend further effort until this provision is satisfied. Deviation to this requirement shall not be granted. Information to be provided in the program plan shall include, but not necessarily be restricted to the following:

APPENDIX B  
Page 2

- a. Detailed milestone chart with begin and complete dates.
- b. Scheduled manpower loading by major activities.
- c. Scheduled release of major or critical item procurements.
- d. Scheduled expenditure of funds and their allocation.

1.5. Design Concept: A design concept which adequately describes the concepts to be utilized shall be submitted to the customer for approval within four (4) weeks after award of the contract. The concept shall be re-reviewed for performance, electrical, maintainability, reliability and interface adequacy. Deviation from the approved design concept shall be made only if approval of the deviation is granted by the customer.

1.6. Subsystem Specifications: Detailed subsystem specifications which define the characteristics of the subsystem under consideration shall be required. The following represents topics which shall be utilized as applicable to the particular specification:

- Volumetric Requirements
- Maximum Power Consumption
- Packaging Concept
- Maintainability Concept
- Primary Power or Internal Power Specification
- Worst Case Operating/Storage Environment
- Specification of Driving Source
- Input Characteristics
- Subsystem Transfer Characteristics
- Load Characteristics
- Output Characteristics
- Definition of Logic Levels/Functions
- Reliability Requirements
- Tolerances
- Testing Requirements - Environmental/Acceptance

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The subsystems specifications shall be approved by the customer prior to their release to design engineering or to the procurement activity. Normally the approval of these specifications will be made during a specification review meeting. The date of the review(s) shall be determined by mutual agreement between the customer and the contractor.

- 1.7. Acceptance Test Plan (ATP): The ATP shall be submitted to the customer for approval at least four (4) weeks prior to initiation of acceptance tests. The customer shall respond within two (2) weeks after receipt of the ATP.
- 1.8. Environmental Test Plan (ETP): The ETP shall be submitted to the customer for approval at least four (4) weeks prior to initiation of testing. The customer shall respond within two (2) weeks after receipt of the ETP.
- 1.9. Compatibility Test Plan: A test plan designed to demonstrate the adequacy of the "J-218 Test Set" in evaluating the system specified herein shall be submitted to the customer at least four (4) weeks prior to initiation of the test. The customer shall respond within two (2) weeks after receipt of the plan. All systems shall have undergone acceptance testing prior to this test phase.
- 1.10. Test Reports: Test reports (acceptance and environmental) shall be submitted to the customer within four (4) weeks after the completion of the subject test. A quantity of three (3) each is required.
- 1.11. Final Engineering Report: The final engineering report shall be submitted to the customer within six (6) weeks after acceptance of the last prototype system. A quantity of three (3) reports is required.
- 1.12. Drawings and Specifications: Drawings and specifications shall be provided only to the extent necessary to assure reproducibility of the prototype systems. All drawings and specifications used to develop equipment covered by this specification shall become the property of the customer and shall be delivered at his request.

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- 1.13. Other Documentation: The customer shall be furnished documentation which may include results of analysis, results of component or subsystems tests, procurement or process specifications, and other timely topics. This documentation shall be handled as "rough draft material." A quantity of one (1) each of the documents will usually be sufficient.
2. MANAGEMENT
  - 2.1. Personnel: The customer reserves the prerogative of reviewing the bibliographies of all technical personnel who are proposed by the contractor to be employed on this effort. All personnel utilized on the effort are required to have security clearances of the level designated by the customer's Security Officer.
  - 2.2. Design Review: A formal detailed design review shall be scheduled during the development phase. The date of the review shall be arrived at by mutual agreement between the customer and the contractor. The customer shall be solely responsible for determining the adequacy and suitability of the design. Specifications and drawings shall be available at this review. One (1) set of approved drawings shall be retained by the customer.
  - 2.3. Liaison: The customer and the contractor shall engage in timely liaison for the purpose of maintaining program control, resolving problems, reviewing progress, and maintaining or verifying technical adequacy. Personnel visits, correspondence, and timely telephone communication shall be used as applicable.
  - 2.4. Change of Scope: If, during the course of this effort, the contractor is of the opinion that the direction given by the customer constitutes a change of scope, the contractor shall forward documentation which justifies his position. Cost estimates and schedule implications shall be provided in this documentation. One (1) copy each shall be furnished the customer's contracting officer and project officer.

APPENDIX B

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2.5. Request for Deviations: If deviations to any portion of the requirements set forth in this specification are in the opinion of the contractor to be appropriate, the contractor shall comply, by documentation, with the following:

- a. Clearly identify the topic of interest.
- b. Clearly describe why such a deviation is in the best interests of the customer.
- c. Clearly describe the alternate solution to the requirement.
- d. Provide detailed cost information.
- e. Provide detailed schedule information.

NOTE: The above provision does not apply to those items which have been identified as being nonwaverably. Two (2) copies of the documentation is required.



## APPENDIX C

## SUMMARY

## DELIVERABLE ITEMS/SERVICES

<u>Item</u>	<u>Description</u>	<u>Date</u>
1a.	Deliver first accepted prototype W-80C	30 July 1967
1b.	Deliver second accepted prototype W-80C	30 August 1967
2.	Monthly Report - Progress	Monthly
3.	Monthly Report - Manpower and Financial	Monthly
4.	Program Plan	Two (2) weeks after award
5.	Design Concept	Four (4) weeks after award
6.	Subsystem Specifications	Prior to design release
7.	Acceptance Test Plan	Four (4) weeks prior to test
8.	Environmental Test Plan	Four (4) weeks prior to test
9.	Compatibility Test Plan	Four (4) weeks prior to test
10.	Test Reports	Four (4) weeks after completion of test
11.	Final Engineering Report	Six (6) weeks after acceptance of second prototype

APPENDIX C

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- |     |                                  |                                     |
|-----|----------------------------------|-------------------------------------|
| 12. | Other Documentation              | As required                         |
| 13. | Drawings and Specifications      | As required                         |
| 14. | Design Review                    | As negotiated                       |
| 15. | Liaison                          | As required                         |
| 16. | MTBF Calculations                | April 1967                          |
| 17. | Environmental Test Facility      | As required to support "lb"         |
| 18. | Deliver J-218 and Test Equipment | As required to support "la"         |
| 19. | Additional Spectral Filters      | As required to support flight test* |

\* Revised to read "Two (2) Additional Spectral Filters of the W-80C type or design."

APPENDIX D

CUSTOMER FURNISHED EQUIPMENT/SERVICES

1. The following items of system associated hardware shall be furnished by the customer:
  - 1.1. All aircraft wiring, cables, etc.
  - 1.2. All cockpit control switches
  - 1.3. All cockpit indicators
2. Additionally the customer shall provide the following:
  - 2.1. Simulator test facilities exclusive of W-80C and special equipment for support of W-80C.
  - 2.2. Test bed for flight test activities
  - 2.3. Background flight tests
  - 2.4. Target detection flight tests
  - 2.5. Facilities to support test bed operations exclusive of W-80C and special equipment for support of W-80C
  - 2.6. Targets (interceptors) for target detection tests
  - 2.7. Specialized data reduction facilities

APPENDIX E

(OUTLINE)  
SPECIFICATION

PASSIVE IR DETECTION DEVICE  
(W-80C)  
\_\_\_\_\_ TESTING

1. SCOPE AND CLASSIFICATION
  - 1.1. Scope
  - 1.2. Classification
2. APPLICABLE DOCUMENTS
3. REQUIREMENTS
  - 3.1. Experimental Evaluation
  - 3.2. Structural and Aerodynamic Worthiness
  - 3.3. Design Goals
  - 3.4. Instrumentation and Standards
    - 3.4.1. Instrumentation and Equipment
    - 3.4.2. Airborne Instrument Systems
    - 3.4.3. Standards and Tolerances
  - 3.5. Documentation of Tests
    - 3.5.1. Summary
    - 3.5.2. Introduction
    - 3.5.3. Test Objective

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- 3.5.4. Instrumentation
- 3.5.5. Test Set Up
- 3.5.6. Test Procedure
- 3.5.7. Data Assessment
- 3.5.8. Test Results
- 3.5.9. Vulnerability Analysis
- 3.5.10. Conclusions
- 3.5.11. Recommendations
- 4. QUALITY ASSURANCE
  - 4.1. Instrumentation and Equipment Operation
  - 4.2. Test Procedures
  - 4.3. Data Processing and Assessment
- 5. PREPARATION FOR DELIVERY
  - (Not Applicable)
- 6. NOTES
  - 6.1. Definition of Terms

REVISIONS TO STATEMENT OF WORK  
W80C RETROFIT PROGRAM

- A. Page 1, I, Introduction (line 4)

Add:

". . . and maintainability, in accordance with the provisions of the document "Specification for Passive IR Warning Device (W-80C)" approved on 10 January 1967 by the contractor."

- B. Page 2, II, Work Items, paragraph 1 (b)

Change to Read:

b) "Manufacture sufficient for two (2) W-80C units plus operational spares in a minimum quantity of 10 modules.

- C. Page 2, paragraph 2

Add:

d) Servo subsystem

- D. Page 3, paragraph 5

Change to Read:

". . . thermoelectric coolers capable of assuring compliance with paragraph 3.1.7. and paragraph 3.5. of the document "Specification for Passive IR Warning Device (W-80C)."

- E. Page 3, paragraph 6

Add:

d) Elevation scan  
e) Cryogenic subsystem

- F. Page 4, paragraph 12

Add:

12. Software items (quantity in accordance with "Specification for Passive IR Warning Device (W-80C)". Appendix B) as follows:

G. Page 5 (new paragraph)

Add:

13. Determination of Probability of Detection and Detection Range:  
Probability of detection and determination of detection range shall be determined by testing of the W-80C at the customer's simulation facility. Parameters specified in paragraphs 3.2., 3.3., 3.4., 3.5., and 3.6.4. of the document "Specification for Passive IR Warning Device (W-80C)" shall be used.

STATEMENT OF WORK  
W80C RETROFIT PROGRAM

I INTRODUCTION

The necessary facilities, personnel and materials will be provided to conduct a retrofit program on the two existing W80 units. The object of the program is to improve system reliability, performance, and maintainability. In order to achieve these objectives, certain modifications and additions to the system logic design will be incorporated, in order to lower the false alarm rate and increase the system capabilities. Improved detector arrays and analog electronics will result in an improved signal to noise ratio and an increased detection range, consistent with a given probability of detection. A different detector biasing arrangement and modified analog packaging techniques will be employed to improve system reliability. The electronics will be contained in removable plug-in cards for ease of servicing. The power supplies will be integral units fastened to the nose-cone bulkhead. They will be repackaged with a form factor to make more efficient use of the available volume.

The program will consist of system definition, outside procurement of subassemblies such as detector arrays, thermoelectric coolers, and power supplies, in-house procurement of thin-film analog electronics, electronic redesign and repackaging, and mechanical modification of bracketry interior to the pod. This will be followed by fabrication, assembly and test. The fully-assembled system



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will be subjected to bench tests, environmental tests, and acceptance tests.

The J218 Supporting Test Equipment will be modified as required to provide a means of adequately checking and servicing the W80C in the field. A compatibility test will demonstrate its capabilities in checking out the W80C system.

The units are scheduled to be through acceptance testing by the first of September 1967.

## II

### WORK ITEMS

The work items to be accomplished during the performance of this program are as follows:

1. Thin-film, flip-chip amplifiers
  - a) Design, test, and set-up
  - b) Manufacture sufficient for two (2) W80C units plus spares.
2. Electronic redesign and packaging
  - a) Preamplifier package
  - b) Signal processing package
  - c) Specify, procure and test power supplies.
3. Electronic design additions
  - a) Two-hit logic circuit design
  - b) Extended target discrimination
  - c) Twelve-sector logic and display
  - d) Elapsed time meter
  - e) Photo limit switches.

4. Procure two (2) detector arrays.
5. Design, specify and procure two (2) thermoelectric coolers.
6. Self-test modification

In addition to testing for n/100 operational channels, elevation scan and detector cooling, the self-test subsystem will also include

- a) Azimuth scan
  - b) Extended target discrimination
  - c) Two-hit logic.
7. Modification of the J218 Supporting Test Equipment
    - a) Procure off-the-shelf test equipment to complete the J218
    - b) Modify the J218 mobile test set as required to check out the modified W80C unit
    - c) Perform a compatibility test to demonstrate the capabilities of the J218 in checking out the W80C.
  8. Retrofit No. 1 Unit W80C
    - a) Final assembly
    - b) Bench checkout and alignment
    - c) Acceptance testing.

9. Retrofit No. 2 Unit W80C
  - a) Final assembly
  - b) Bench checkout and alignment
  - c) Environmental testing
  - d) Acceptance testing.
10. Project Management.
11. Mean-Time-Before-Failure Calculations.
12. Software Items as follows:
  - a) Monthly progress reports
  - b) Monthly manpower and financial reports
  - c) Program plan, to include
    1. Detailed milestone chart
    2. Scheduled manpower loading
    3. Scheduled release of major procurements
    4. Scheduled expenditure of funds and their allocation.
  - d) Design concept, to include subsystem specifications.
  - e) Acceptance test plan (1 copy).
  - f) Environmental test plan. (1 copy)
  - g) Compatibility test plan. (1 copy)
  - h) Test reports, to include
    1. Acceptance test reports (3 each)
    2. Environmental test reports (3 each)
  - i) Final engineering report (3 copies)

- j) Drawings and specifications to the extent necessary to ensure reproducibility of the prototype systems.
- k) Other documentation such as analytical results, component and subsystem test results and specifications. This will be submitted as requested by the customer, in rough draft form. (1 copy each).

## III

COMPLETION/DELIVERY SCHEDULE

The various tasks included in the program will be accomplished according to the following schedule. Those items which are deliverable are marked as such.

<u>Work Item</u>	<u>Completion/De- livery Date</u>	<u>Deliverable Item</u>
1a. Thin-film set-up	Mar. 24	
b. Manufacture	June 30	
2a. Preamplifier	June 9	
b. Signal processing	June 9	
c. Power supplies	June 9	
3a. Two-hit logic	June 9	
b. Extended target	June 9	
c. Twelve sector logic	June 9	
d. Elapsed time meter	June 9	
e. Photo limit switches	June 9	
4. Detector arrays	June 23	

6a.	Self-test, az. scan	June 9	
b.	Self-test, ETD	June 9	
c.	Self-test, two-hit logic	June 9	
7a.	J218 T. E.	May 5	
b.	Modify J218	July 28	
c.	Compatibility test	Aug. 4	J218
8a.	No. 1 final assembly	June 16	
b.	No. 1 checkout	July 14	
c.	No. 1 acceptance	July 28	No. 1 W80C
9a.	No. 2 final assembly	July 5	
b.	No. 2 checkout	July 28	
c.	No. 2 environmental test	Aug 18	
d.	No. 2 acceptance test	Sept. 1	No. 2 W80C
10.	Project management	Continuing	
11.	MTBF	Sept 1	
12a.	Progress reports	Monthly	Yes
b.	Manpower reports	Monthly	Yes
c.	Program plan	Jan 10	Yes
d.	Design concept	Jan 27	Yes
e.	Acceptance test plan	June 16	Yes
f.	Environmental test plan	June 30	Yes
g.	Compatibility test plan	June 30	Yes
h1.	Acceptance test report - No. 1	August 25	Yes
	No. 2	Sept. 29	Yes
h2.	Environmental test report	Sept. 15	Yes

j.	Drawings	Sept. 1	Yes
k.	Other documentation	As required	Yes

DE-201-66

Contract No. FH-2515  
Amendment No. 4

10 June 1966

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. The Contractor has been requested to provide a Sun Sensor which is to include the following:

A. Develop, design, fabricate, and test one Sun Sensor.

B. Integrate the Sun Sensor into a flyable prototype System 20 to be used during flight tests of the System 20.

2. The Contract will deliver the Sun Sensor prior to 2 July 1966 in accordance with the requirements set forth in the basic contract and its technical attachment for System 20. The Contractor is requested to establish a separate cost account for this effort.

3. As a result of the foregoing, PART III of the contract, as amended, is hereby further amended as follows:

"PART III - ESTIMATED COST AND FIXED FEE

A. The estimated cost for the performance of this contract is \$809,047.00 (exclusive of the amount set forth in paragraph 6 of Amendment No. 2). Costs in excess of this amount shall not be incurred without prior written authorization from the Contracting Officer.

B. The fixed fee for the performance of the contract is \$59,998.00."

4. There has been allotted for the performance of this contract the total sum of \$896,045.00. The total amount payable to the Contractor shall not exceed this amount without written authorization from the Contracting Officer. The Contractor shall notify the Contracting Officer when 85 per cent of the total allocated funds have been expended.

DE-201-66

Contract No. FH-2515  
Amendment No. 4  
Page 2

5. All other terms, conditions, and requirements of this contract, as amended, remain unchanged.

6. Please indicate your receipt and acceptance of this Amendment No. 4 to Contract No. FH-2515 by executing the original and three copies hereof. Return the original and two copies to the undersigned and retain the remaining copy for your files.

AEROJET-GENERAL CORPORATION

THE UNITED STATES OF AMERICA

BY

TITLE

DATE 14 June 1966

Contracting Officer

25X<sup>25</sup>1



09-7  
copy 1

DE-182-66

Contract No. FH-2515  
Amendment No. 3

12 May 1966

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. In accordance with your letter of 28 April 1966, you have advised the Government that you have reached the authorized contract estimated cost limit and that an additional \$45,000 will be necessary to complete the work. You have indicated that your requirement for additional funding is based upon a number of technical reversals and several other factors all of which have contributed to the need for additional funding.

2. As a result of the foregoing, PART III of the contract, as amended, is hereby further amended as follows:

PART III - ESTIMATED COST AND FIXED FEE

A. The estimated cost for the performance of this contract is \$803,464, (exclusive of the amount set forth in paragraph 6 for Field Support). Costs in excess of this amount shall not be incurred without prior written authorization of the Contracting Officer.

B. The fixed fee for the performance of the contract is \$59,581.

3. There has been allotted for the performance of this contract the total sum of \$890,045. The total amount payable to the Contractor shall not exceed this amount without written authorization from the Contracting Officer. The Contractor shall notify the Contracting Officer when 85 per cent of the total allocated funds have been expended.

4. All other terms, conditions and requirements of this contract, as amended, remain unchanged.

5. Please indicate your receipt and acceptance of this Amendment No. 3 to Contract No. FH-2515 by executing the original and three copies hereof. Return the original and two copies to the undersigned and retain the remaining copy for your files.

DE-182-66  
Contract No. FH-2515  
Amendment No. 3  
Page 2

AEROJET-GENERAL CORPORATION

BY \_\_\_\_\_

TITLE \_\_\_\_\_

DATE 17 May 1966

THE UNITED STATES OF AMERICA

BY \_\_\_\_\_

Contracting Officer

25X<sup>4</sup>25X1

DE-174-66

Contract No. FH-2515  
Amendment No. 2

5 May 1966

Aerofet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

In accordance with the Contractor's proposal, CJC:66006, as amended by the Contractor on 18 March 1966 and 30 March 1966, and pursuant to negotiations and agreement of the parties hereto, Contract FH-2515, as amended, is hereby further amended as follows:

1. The sum of \$27,035.00 including fee is provided for special supporting test equipment for the W80C system.

2. The sum of \$1,765.00 including fee is provided for the development and fabrication of a cooling cart.

3. The sum of \$5,245.00 including fee is provided for the design and fabrication of special data reduction equipment. Conceptual drawings of the special test equipment and of the cooling cart shall be submitted to the Government technical representative for approval prior to fabrication.

4. The sum of \$6,000.00 maximum is provided for "Off-the-Shelf" equipment. Procurement of this equipment shall be initiated only as requested by the Contracting Officer. The Contractor will be reimbursed therefor at cost only without G&A, overhead, or profit.

5. As a result of the foregoing, PART III of the contract, as amended, is hereby further amended as follows:

PART III - ESTIMATED COST AND FIXED FEE

A. The estimated cost for the performance of this contract is \$758,464.00 (exclusive of the amount set forth in paragraph 6 for Field Support). Costs in excess of this amount shall not be incurred without prior written authorization of the Contracting Officer.

B. The fixed fee for the performance of the contract is \$59,581.00.

DE-174-66

Contract No. FH-2515

Amendment No. 2

Page 2

6. Funding in the maximum amount of \$27,000.00 is provided for Field Support and the reduction of flight test data. Item No. 1, W80C, Flight Test Plan, is eliminated. When requested by the Contracting Officer on a specific task assignment basis, the Contractor shall provide Field Support on a Time and Materials basis. The Contractor will be reimbursed for this effort in accordance with the following rates for salaried and hourly employees.

Salary. . . . . \$20.57

Hourly. . . . . \$10.58

It is understood and agreed that these rates include all applicable overhead, G&A, and profit. Should the Field Support effort require procurement or furnishing of material, it is agreed that the Contractor will be reimbursed therefor at cost plus G&A only.

7. There has been allotted for the performance of this contract the total sum of \$845,045.00. The total amount payable to the Contractor shall not exceed this amount without written authorization from the Contracting Officer. The Contractor shall notify the Contracting Officer when 85 per cent of the total allocated funds have been expended.

8. All other terms, conditions and requirements of this contract, as amended, remain unchanged.

9. Please indicate your receipt and acceptance of this Amendment No. 2 to Contract No. FH-2515 by executing the original and three copies hereof. Return the original and two copies to the undersigned and retain the remaining copy for your files.

AEROJET-GENERAL CORPORATION

THE UNITED STATES OF AMERICA

BY

TITLE

Contracting Officer

DATE 17 May 1966

25X15X1

DE-144-66

Contract No. FH-2515

Amendment No. 1

21 March 1966

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Gentlemen:

1. Contract No. FH-2515 is hereby amended by the inclusion of the work set forth in the attached statement of work, "EXHIBIT I." The Contractor shall furnish the necessary materials and services and complete the work in accordance with the delivery schedule set forth therein as a result thereof.

2. PART III - ESTIMATED COST AND FIXED FEE is deleted in its entirety and the following substituted therefor:

"PART III - ESTIMATED COST AND FIXED FEE

A. The estimated cost for performance of this contract is \$721,000.00. Costs in excess of this amount shall not be incurred without prior written authorization of the Contracting Officer.

B. The fixed fee for the performance of this contract is \$57,000.00"

3. All other terms, conditions and requirements of Contract FH-2515 remain unchanged.

4. Please indicate your receipt and acceptance of this Amendment No. 1 to Contract FH-2515 by executing the original and three copies hereof. Return the fully executed original and two copies to the undersigned and retain the remaining copy for your files.

ACKNOWLEDGED & ACCEPTED

BY \_\_\_\_\_

TITLE \_\_\_\_\_

DATE 1 April 1966

THE UNITED STATES OF AMERICA

\_\_\_\_\_  
Contracting Officer

25X1  
25X1

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EXHIBIT I  
STATEMENT OF WORK

Page 1 of 2

The Contractor shall furnish the necessary materials and services to complete the following items of work generally in accordance with the technical approach set forth in Contractor's Proposal CJC:66004 dated 17 February 1966, which is incorporated herein by reference and made a part hereof:

ITEM I - DEVELOPMENT

- A. Perform a detailed design of the W80C Search Set to permit fabrication of flyable units. Prepare such drawings and sketches to Aerojet format as are necessary for fabrication in accordance with good engineering practices by model shop personnel.
- B. Fabricate two (2) each flyable W80C units in accordance with drawings and sketches provided and good engineering practice.
- C. Perform laboratory tests on the systems to establish system performance characteristics.
- D. Design and fabricate two (2) each pod structures to house the W80C components. The design to be coordinated with and approved by vehicle personnel.
- E. Deliver two (2) each W80C models, including two (2) pods.
- F. Design and fabricate a thermal flight test model utilizing simulated components. Coordination will be maintained with vehicle personnel regarding monitoring and data recording requirements. Prepare a test plan and submit to the contracting officer's technical representative for approval ten (10) working days prior to conduct of the tests. Response by the customer shall be made at least five (5) working days prior to first scheduled flight test.

Page 2 of 2

In cooperation with vehicle personnel, install the flight test model, perform ground checks, and maintain liaison throughout the flight test phase. Perform data reduction and analysis of the test results.

ITEM II - ENVIRONMENTAL TESTS

Perform vibration and shock tests on the second deliverable prototype W80C system prior to delivery.

ITEM III - DOCUMENTATION

No changes contemplated to documentation to be supplied.

COMPLETION/DELIVERY SCHEDULE

Item I E.	Delivery	1st Unit	16 April 1966
		2nd Unit	14 May 1966
Item I F.	Submit thermal flight test plan by 7 March 1966. Based upon receipt of approval of the test plan by 17 March 1966, deliver Thermal Flight Test Model on 17 March 1966 and complete flight tests by 19 March 1966. Complete data reduction and analysis by 23 March 1966.		
Item III C.	Drawings		28 May 1966
Item III D.	Final Engineering & Test Report		28 May 1966

NEGOTIATED CONTRACT

Contract No. FH-2515  
AF33(657)-15237

Aerojet-General Corporation  
Von Karman Center  
Azusa, California

Contract For: See Schedule

Amount: See Schedule

Mail Invoices To:

Performance Period: See  
Schedule

Administrative Data: This is a CPFF Type Contract

This contract is entered into by and between the United States of America, hereinafter called the Government, represented by the Contracting Officer executing this contract, and the above-named Contractor which is a corporation, incorporated in the State of Ohio hereinafter called the Contractor.

The parties hereto agree that the Contractor shall furnish the facilities and deliver all supplies and perform all the services set forth in the attached Schedule issued hereunder, for the consideration stated therein.

The rights and obligations of the parties to this contract shall be subject to and governed by the attached Schedule and the General Provisions. In the event of any inconsistency between the Schedule and the General Provisions, the Schedule shall control.

IN WITNESS WHEREOF, the parties hereto have executed this contract as of 13 OCT 1965.

AEROJET-GENERAL CORPORATION

BY

TITLE

DATE 28 October 1965

THE UNITED STATES OF AMERICA

BY

TITLE Contracting Officer

225X1

- 1- CMD
- 2- Contractor
- 3- 700
- 4- Denard

SECRET



~~SECRET~~

Contract No. FH-2515  
AF33(657)-15237

CERTIFICATE

I, \_\_\_\_\_, certify that I am  
the \_\_\_\_\_ of the Corporation named  
as Contractor herein; that \_\_\_\_\_ who  
signed this contract on behalf of the Contractor was then \_\_\_\_\_  
\_\_\_\_\_ of said Corporation; that said Contract was  
duly signed for and in behalf of said Corporation by authority of  
its governing body, and is within scope of its Corporate Powers.

\_\_\_\_\_  
(Corporate Seal)

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Contract No. FH-2515  
AF33(657)15237

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Contract No. FH-2515  
AF33(657)-15237

### SCHEDULE

#### PART I - SCOPE OF WORK

Contractor shall furnish the necessary services, facilities, material and supplies to accomplish the work set forth in Exhibit "A" attached hereto and made a part of the Schedule of this contract.

#### PART II - DELIVERY

Contractor shall accomplish the work and make such deliveries as set forth in Exhibit "A" attached hereto. The work to be performed under this contract shall be completed on or before 31 March 1966 unless such time is extended by the Contracting Officer.

#### PART III - ESTIMATED COST AND FIXED FEE

A. The estimated cost for the performance of this contract is \$671,296.00. Costs in excess of this amount shall not be incurred without prior written authorization of the Contracting Officer.

B. The fixed fee for the performance of this contract is \$53,704.00.

#### PART IV - PAYMENTS

A. In accordance with the provisions of Clause 3 of the General Provisions of this contract entitled "Allowable Cost, Fixed Fee, and Payment," the Government shall pay the Contractor, as full compensation for the performance of this contract the fee as specified in PART III above and the allowable cost incurred by the Contractor in the performance of this contract, and accepted by the Contracting Officer as chargeable in accordance with "Contract Cost Principles," such determination being subject to the provisions of this contract entitled "Disputes", it being understood and agreed, without limiting the generality of the foregoing, that the following shall be considered as allowable items of costs incurred hereunder when incurred or paid by the Contractor, and when necessary and required and used for the performance of work hereunder:

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1. It is recognized and agreed that overtime will be required in order to fulfill the performance schedule of the contract. The Contractor agrees to limit such overtime, insofar as practicable, consistent with meeting such schedule. Therefore, notwithstanding Clause 26, "PAYMENT FOR OVERTIME AND SHIFT PREMIUMS" of the General Provisions to the contrary, no restrictions are imposed on such overtime and prior approvals therefor, by the Contracting Officer are not required.
- ✓ 2. Costs of travel within the continental limits of the United States, when such travel is performed in accordance with Contractor's established travel policy and PART V hereof. Travel costs to overseas or to symposiums shall not be allowed unless authorized by the Contracting Officer.
3. Costs of shipping charges of material hereunder from Contractor's plant to final destination shall be an allowable item of cost hereunder.
- ✓ 4. Postal and telephone costs incurred in the performance of this contract.
- ✓ 5. Such other costs as may be approved by the Contracting Officer.

✓ B. For purposes of billing current costs incurred under this contract or until such time as an audit of Contractor's interim or final vouchers is made by the Contracting Officer or his authorized representative, the Contractor shall, for purposes of computing costs, use those rates which are currently approved by the cognizant military department for billing purposes under CPFF contracts.

C. Contractor shall be paid the fee stated in PART III herein in monthly installments based on allowable costs incurred by the Contractor and approved by the Contracting Officer computed at the same ratio that the fee stated is to the total estimated cost stated herein, subject, however, to the withholding provisions of paragraph (c) of Clause 3 of the General Provisions.

✓ PART V - AIR TRAVEL COSTS

The Contractor agrees, in the performance of necessary air travel allocable to this contract, to use air coach, tourist class, or similar accommodations to the extent consistent with the successful and economical accomplishment of the mission for which the travel is being made.

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**SECRET****PART VI - GOVERNMENT FURNISHED FACILITIES**

In the performance of this contract, the Contractor is authorized to use, on a no-charge-for-use basis, the Government owned facilities and/or Government owned property presently under facility contracts AF33(038)-11378 and NOW 6104-u and under supply contract AF04(695)-371, provided such use does not interfere with the work for which such facilities were or are to be furnished.

**PART VII - SPECIAL SECURITY RESTRICTIONS**

The Contractor shall not reveal (i) the specific nature or any details of the work being performed hereunder or (ii) any information whatsoever with respect to the department of the Government sponsoring this contract and the work thereunder except as the Contractor is directed or permitted to reveal such information by the Contracting Officer or by his duly authorized representative for security matters, and notwithstanding any clause or section of this contract to the contrary, the Contractor shall not interpret any clause or section of this contract as requiring or permitting divulgence of such information to any person, public or private, or to any officer or department of the Government without the express consent of the Contracting Officer or his duly authorized representative for security matters.

**PART VIII - WAIVER OF REQUIREMENTS OF GENERAL PROVISIONS**

Notwithstanding the requirements of any of the General Provisions of this contract to the contrary, whensoever, the Contractor, in performance of the work under this contract, shall find the requirements of any of the clauses of the General Provisions are in conflict with security instructions issued to the Contractor by the Contracting Officer or by his authorized representative for security matters, the Contractor shall call the attention of the Contracting Officer to such conflict and the Contracting Officer or his duly authorized representative for security matters shall (i) modify or rescind such security requirements or (ii) the Contracting Officer shall issue to the Contractor a waiver of compliance with the requirements of the General Provisions conflicting with such security requirements. Any waiver of compliance with the General Provisions of this contract issued by the Contracting Officer shall be in writing, except that the approval by the Contracting Officer of any subcontract issued hereunder by the Contractor shall be deemed to constitute approval of waiver of any clause of the General Provisions in conflict with the stipulations of such subcontract.

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PART IX - ANTICIPATORY COSTS

All costs which have been incurred by the Contractor on or after 15 September 1965 in anticipation of and prior to the signing of this contract and, which would have been considered as allowable costs hereunder, will be accepted by the Contracting Officer as costs under this contract.

PART X - ALTERATIONS IN SCHEDULE

The following alterations were made in this Schedule prior to execution of this contract:

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Contract No. FH-2515  
AF33(657)-15237

EXHIBIT "A"  
TO  
SCHEDULE

PART I - SCOPE OF WORK

The Contractor shall furnish the necessary materials and services to complete the following items of work generally in accordance with the technical approach set forth in Contractor's Proposal CJC-65002B, dated 14 September 1965, which is incorporated herein by reference and made a part hereof:

Item 1 - Prototype Development

- A. Perform a detailed design of the W80B Search Set to permit fabrication of flyable prototype units. Prepare such drawings and sketches to Contractor's format as are necessary for fabrication in accordance with good engineering practices by model shop personnel.
- B. Fabricate two (2) each flyable prototype W80B units in accordance with drawings and sketches provided and good engineering practice. Inspection will be to Contractor's Development Test Articles standards.
- C. Perform laboratory tests on the systems to establish system performance characteristics.
- D. Deliver two (2) each prototype W80B models.

Item 2 - Environmental Tests

Perform vibration and shock tests on one (1) prototype W80B system.

Item 3 - Documentation

- A. Prepare and deliver monthly technical reports according to agreed to format.
- B. Prepare and deliver monthly manpower and expenditure summaries.
- C. Deliver system installation and schematic drawings outlining the equipment operation. Item 1.A covers their preparation.

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- D. Prepare and deliver one (1) final engineering report containing criteria and results of all engineering analysis and development work performed during the prototype development program. Prepare a test report containing results of all prototype laboratory and environmental tests and include with the final engineering report.

## PART II - COMPLETION/DELIVERY SCHEDULE

Under this contract the Contractor shall furnish the following deliverable items:

### Item 1 - Prototype Development

- |              |          |                      |
|--------------|----------|----------------------|
| D. Delivery: | 1st Unit | By 22 January 1966   |
|              | 2nd Unit | During February 1966 |

### Item 3 - Documentation

- |   |  |
|---|--|
| A. Monthly Technical Reports<br><i>delivered to the contractor<br/>by the end of the reporting period</i>   | Within ten (10) days<br>after end of reporting<br>period (15th of Month) |
| B. Monthly Financial Summaries<br><i>delivered to the contractor<br/>by the end of the reporting period</i> | Within ten (10) days<br>after end of reporting<br>period (1st of Month)  |
| C. Drawings   | During February 1966   |
| D. Final Engineering and Test Report  | During February 1966   |

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**GENERAL PROVISIONS**  
**COST-REIMBURSEMENT RESEARCH AND**  
**DEVELOPMENT CONTRACT**  
**(With Fixed Fee)**

**1. DEFINITIONS (Feb. 1962)**

As used throughout this contract, the following terms shall have the meanings set forth below:

(a) The term "head of the agency" or "Secretary" means the Secretary, the Under Secretary, any Assistant Secretary, or any other head or assistant head of the executive or military department or other Federal agency; and the term "his duly authorized representative" means any person or persons or board (other than the Contracting Officer) authorized to act for the head of the agency or the Secretary.

(b) The term "Contracting Officer" means the person executing this contract on behalf of the Government, and any other officer or civilian employee who is a properly designated Contracting Officer; and the term includes, except as otherwise provided in this contract, the authorized representative of a Contracting Officer acting within the limits of his authority.

(c) Except as otherwise provided in this contract, the term "subcontracts" includes purchase orders under this contract.

(d) The term "contract work" means all work to be performed under this contract including without limitation any studies covering fundamental, theoretical, or experimental investigations; any extension of the investigative findings and theories of a scientific or technical nature into practical application; any tangible items, hereinafter referred to as "supplies," furnished to the Government; and any reports, data, computations, plans, drawings, and specifications with respect to any of the foregoing. (Oct. 1957)

**2. LIMITATION OF COST (Feb. 1959)**

(a) It is estimated that the total cost to the Government, exclusive of any fixed fee, for the performance of this contract will not exceed the estimated cost set forth in the Schedule, and the Contractor agrees to use his best efforts to perform the work specified in the Schedule, and all obligations under this contract within such estimated cost. If at any time the Contractor has reason to believe that the costs which he expects to incur in the performance of this contract in the next succeeding sixty (60) days, when added to all costs previously incurred, will exceed seventy-five per cent (75%) of the estimated cost then set forth in the Schedule,

or if at any time, the Contractor has reason to believe that the total cost to the Government, exclusive of any fixed fee, for the performance of this contract will be substantially greater or less than the then estimated cost thereof, the Contractor shall notify the Contracting Officer in writing to that effect, giving the revised estimate of such total cost for the performance of this contract.

(b) The Government shall not be obligated to reimburse the Contractor for costs incurred in excess of the estimated cost set forth in the Schedule, and the Contractor shall not be obligated to continue performance under the contract or to incur costs in excess of the estimated cost set forth in the Schedule, unless and until the Contracting Officer shall have notified the Contractor in writing that such estimated cost has been increased and shall have specified in such notice a revised estimated cost which shall thereupon constitute the estimated cost of performance of this contract. When and to the extent that the estimated cost set forth in the Schedule has been increased, any costs incurred by the Contractor in excess of such estimated cost prior to the increase in estimated cost shall be allowable to the same extent as if such costs had been incurred after such increase in estimated cost.

**3. ALLOWABLE COST, FIXED FEE, AND PAYMENT (Sept. 1962)**

(a) For the performance of this contract, the Government shall pay to the Contractor:

(i) the cost thereof (hereinafter referred to as "allowable cost") determined by the Contracting Officer to be allowable in accordance with—

(A) Part 2 of Section XV of the Armed Services Procurement Regulation as in effect on the date of this contract; and

(B) the terms of this contract; and

(ii) such fixed fee, if any, as may be provided for in the Schedule.

(b) Once each month (or at more frequent intervals, if approved by the Contracting Officer) the Contractor may submit to an authorized representative of the Contracting Officer, in such form and reasonable detail as such representative may require, an invoice or public voucher supported by a statement of cost incurred by the Contractor in the performance of this contract and claimed to constitute allowable cost.

(c) Promptly after receipt of each invoice or voucher the Government shall, subject to the provisions of (d) below, make payment thereon as approved by the Contracting Officer. Payment of the fixed fee, if any, shall be made to the Contractor as specified in the Schedule; **Provided**, however, that after payment of eighty-five per cent (85%) of the fixed fee set forth in the Schedule, further payment on account of the fixed fee shall be withheld until a reserve of either fifteen per cent (15%) of the total fixed fee, or one hundred thousand dollars (\$100,000), whichever is less, shall have been set aside.

(d) At any time or times prior to final payment under this contract the Contracting Officer may have the invoices or vouchers and statements of cost audited. Each payment theretofore made shall be subject to reduction for amounts included in the related invoice or voucher which are found by the Contracting Officer, on the basis of such audit, not to constitute allowable cost. Any payment may be reduced for overpayments, or increased for underpayments, on preceding invoices or vouchers.

(e) On receipt and approval of the invoice or voucher designated by the Contractor as the "completion invoice" or "completion voucher" and upon compliance by the Contractor with all the provisions of this contract (including, without limitation, the provisions relating to patents and the provisions of (f) below), the Government shall promptly pay to the Contractor any balance of allowable cost, and any part of the fixed fee which has been withheld pursuant to (c) above or otherwise not paid to the Contractor. The completion invoice or voucher shall be submitted by the Contractor promptly following completion of the work under this contract but in no event later than one (1) year (or such longer period as the Contracting Officer may in his discretion approve in writing) from the date of such completion.

(f) The Contractor agrees that any refunds, rebates, credits, or other amounts (including any interest thereon) accruing to or received by the Contractor or any assignee under this contract shall be paid by the Contractor to the Government, to the extent that they are properly allocable to costs for which the Contractor has been reimbursed by the Government under this contract. Reasonable expenses incurred by the Contractor for the purpose of securing such refunds, rebates, credits, or other amounts shall be allowable costs hereunder when approved by the Contracting Officer. Prior to final payment under this contract, the Contractor and each assignee under this contract whose assignment is in effect at the time of final payment under this contract shall execute and deliver—

(1) an assignment to the Government, in form and substance satisfactory to the Contracting Officer, of refunds, rebates, credits, or other amounts (including any interest thereon) properly allocable

to costs for which the Contractor has been reimbursed by the Government under this contract; and

(ii) a release discharging the Government, its officers, agents, and employees from all liabilities, obligations, and claims arising out of or under this contract, subject only to the following exceptions—

(A) specified claims in stated amounts or in estimated amounts where the amounts are not susceptible of exact statement by the Contractor;

(B) claims, together with reasonable expenses incidental thereto, based upon liabilities of the Contractor to third parties arising out of the performance of this contract; **provided**, that such claims are not known to the Contractor on the date of the execution of the release; **provided further**, that the Contractor gives notice of such claims in writing to the Contracting Officer not more than six (6) years after the date of the release or the date of any notice to the Contractor that the Government is prepared to make final payment, whichever is earlier; and

(C) claims for reimbursement of costs (other than expenses of the Contractor by reason of any indemnification of the Government against patent liability), including reasonable expenses incidental thereto, incurred by the Contractor under the provisions of this contract relating to patents.

(g) Any cost incurred by the Contractor under the terms of this contract which would constitute allowable cost under the provisions of this clause shall be included in determining the amount payable under this contract, notwithstanding any provisions contained in the specifications or other documents incorporated in this contract by reference, designating services to be performed or materials to be furnished by the Contractor at his expense or without cost to the Government.

#### 4. STANDARDS OF WORK (Feb. 1959)

The Contractor agrees that the performance of work and services, pursuant to the requirements of this contract, shall conform to high professional standards.

#### 5. INSPECTION AND CORRECTION OF DEFECTS (May 1960)

(a) All work under this contract shall be subject to inspection and test by the Government (to the extent practicable) at all times (including the period of performance) and places, and in any event prior to acceptance. The Contractor shall provide and maintain an inspection system acceptable to the Government covering the work hereunder. The Government, through any authorized representative, may inspect the plant or plants of the Contractor or of any of his subcontractors engaged in the performance of this contract. If any inspection or test is made by the Government on the premises of the Contractor or a subcontractor

tor, the Contractor shall provide and shall require subcontractors to provide all reasonable facilities and assistance for the safety and convenience of the Government inspectors in the performance of their duties. All inspections and tests by the Government shall be performed in such a manner as will not unduly delay the work. Except as otherwise provided in this contract, final inspection, and acceptance shall be made at the place of delivery as promptly as practicable after delivery and shall be deemed to have been made no later than ninety (90) days after the date of such delivery, if acceptance has not been made earlier within such period.

(b) At any time during performance of this contract, but not later than six (6) months (or such other time as may be provided in the Schedule) after acceptance of all of the end items (other than designs, drawings, or reports) to be delivered under this contract, the Government may require the Contractor to remedy by correction or replacement, as directed by the Contracting Officer, any failure by the Contractor to comply with the requirements of this contract. Any time devoted to such correction or replacement shall not be included in the computation of the period of time specified in the preceding sentence, except as provided in (d) below. Except as otherwise provided in paragraph (c) below, the allowability of the cost of any such replacement or correction shall be determined as provided in the clause of this contract entitled "Allowable Cost, Fixed Fee, and Payment," but no additional fee shall be payable with respect thereto. Corrected articles shall not be tendered again for acceptance unless the former tender and the requirement of correction is disclosed. If the Contractor fails to proceed with reasonable promptness to perform such replacement or correction, the Government (i) may by contract or otherwise perform such replacement or correction and charge to the Contractor any increased cost occasioned the Government thereby, or may reduce any fixed fee payable under this contract (or require repayment of any fixed fee theretofore paid) in such amount as may be equitable under the circumstances, or (ii) in the case of articles not delivered, may require the delivery of such articles, and shall have the right to reduce any fixed fee payable under this contract (or to require repayment of any fixed fee theretofore paid) in such amount as may be equitable under the circumstances, or (iii) may terminate this contract for default. Failure to agree to the amount of any such increased cost to be charged to the Contractor or to such reduction in, or repayment of, the fixed fee shall be deemed to be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes."

(c) Notwithstanding the provisions of paragraph (b) above, the Government may at any time require the Contractor to remedy by correction or replacement,

without cost to the Government, any failure by the Contractor to comply with the requirements of this contract, if such failure is due to fraud, lack of good faith or willful misconduct on the part of any of the Contractor's directors or officers, or on the part of any of his managers, superintendents, or other equivalent representatives, who has supervision or direction of (i) all or substantially all of the Contractor's business, or (ii) all or substantially all of the Contractor's operations at any one plant or separate location in which this contract is being performed, or (iii) a separate and complete major industrial operation in connection with the performance of this contract. The Government may at any time also require the Contractor to remedy by correction or replacement, without cost to the Government, any such failure caused by one or more individual employees selected or retained by the Contractor after any such supervisory personnel has reasonable grounds to believe that any such employee is habitually careless or otherwise unqualified.

(d) The provisions of paragraph (b) above shall apply to any corrected or replacement end item or component until six months after its acceptance.

(e) The Contractor shall make his records of all inspection work available to the Government during the performance of this contract and for such longer period as may be specified in this contract.

(f) Except as provided in this clause and as may be provided in the Schedule, the Contractor shall have no obligation or liability to correct or replace articles which at the time of delivery are defective in material or workmanship or otherwise not in conformity with the requirements of this contract.

(g) Except as otherwise provided in the Schedule, the Contractor's obligation to correct or replace Government-furnished Property (which is property in the possession of or acquired directly by the Government and delivered or otherwise made available to the Contractor) shall be governed by the provisions of the clause of this contract entitled "Government Property."

## 6. ASSIGNMENT OF CLAIMS (Feb. 1962)

(a) Pursuant to the provisions of the Assignment of Claims Act of 1940, as amended (31 U.S.C. 203, 41 U.S.C. 15), if this contract provides for payments aggregating \$1,000 or more, claims for monies due or to become due the Contractor from the Government under this contract may be assigned to a bank, trust company, or other financing institution, including any Federal lending agency, and may thereafter be further assigned and reassigned to any such institution. Any such assignment or reassignment shall cover all amounts payable under this contract and not already paid, and shall not be made to more than one party, except that any such assignment or reassignment may be made to one party as agent or trustee for two or more parties.

ties participating in such financing. Unless otherwise provided in this contract, payments to an assignee of any monies due or to become due under this contract shall not, to the extent provided in said Act, as amended, be subject to reduction or set-off.

(b) In no event shall copies of this contract or of any plans, specifications, or other similar documents relating to work under this contract, if marked "Top Secret," "Secret," or "Confidential," be furnished to any assignee of any claim arising under this contract or to any other person not entitled to receive the same. However, a copy of any part or all of this contract so marked may be furnished, or any information contained therein may be disclosed, to such assignee upon the prior written authorization of the Contracting Officer.

#### **7. EXAMINATION OF RECORDS (Nov. 1962)**

(a) (1) The Contractor agrees to maintain books, records, documents, and other evidence pertaining to the costs and expenses of this contract (hereinafter collectively called the "records") to the extent and in such detail as will properly reflect all net costs, direct and indirect, of labor, materials, equipment, supplies and services, and other costs and expenses of whatever nature for which reimbursement is claimed under the provisions of this contract.

(2) The Contractor agrees to make available at the office of the Contractor at all reasonable times during the period set forth in subparagraph (4) below any of the records for inspection, audit or reproduction by any authorized representative of the Department or of the Comptroller General.

(3) In the event the Comptroller General or any of his duly authorized representatives determines that his audit of the amounts reimbursed under this contract as transportation charges will be made at a place other than the office of the Contractor, the Contractor agrees to deliver, with the reimbursement voucher covering such charges or as may be otherwise specified within two years after reimbursement of charges covered by any such voucher, to such representative as may be designated for that purpose through the Contracting Officer such documentary evidence in support of transportation costs as may be required by the Comptroller General or any of his duly authorized representatives.

(4) Except for documentary evidence delivered to the Government pursuant to subparagraph (3) above, the Contractor shall preserve and make available his records (i) for a period of three years from the date of final payment under this contract, and (ii) for such longer period, if any, as is required by applicable statute, by any other clause of this contract, or by (A) or (B) below.

(A) If this contract is completely or partially terminated, the records relating to the work terminated shall be preserved and made available for

a period of three years from the date of any final settlement.

(B) Records which relate to (i) appeals under the Disputes clause of this contract, (ii) litigation or the settlement of claims arising out of the performance of this contract, or (iii) cost and expenses of this contract as to which exception has been taken by the Comptroller General or any of his duly authorized representatives, shall be retained by the Contractor until such appeals, litigation, claims, or exceptions have been disposed of.

(5) Except for documentary evidence delivered pursuant to subparagraph (3) above, and the records described in subparagraph (4)(B) above, the Contractor may in fulfillment of his obligation to retain his records as required by this clause substitute photographs, microphotographs, or other authentic reproductions of such records, after the expiration of two years following the last day of the month of reimbursement to the Contractor of the invoice or voucher to which such records relate, unless a shorter period is authorized by the Contracting Officer with the concurrence of the Comptroller General or his duly authorized representative.

(6) The provisions of this paragraph (a), including this subparagraph (6), shall be applicable to and included in each subcontract hereunder which is on a cost, cost-plus-a-fixed-fee, time-and-material or labor-hour basis.

(b) The Contractor further agrees to include in each of his subcontracts hereunder, other than those set forth in subparagraph (a)(6) above, a provision to the effect that the subcontractor agrees that the Comptroller General or the Department, or any of their duly authorized representatives, shall, until the expiration of three (3) years after final payment under the subcontract, have access to and the right to examine any directly pertinent books, documents, papers, and records of such subcontractor, involving transactions related to the subcontract. The term "subcontract," as used in this paragraph (b) only, excludes (i) purchase orders not exceeding \$2,500 and (ii) subcontracts or purchase orders for public utility services at rates established for uniform applicability to the general public.

#### **8. SUBCONTRACTS (Nov. 1962)**

(a) The Contractor shall give advance notification to the Contracting Officer of any proposed subcontract hereunder which (i) is on a cost, cost-plus-a-fee, time and material, or labor-hour basis, or (ii) is on a fixed-price basis exceeding in dollar amount either \$25,000 or five per cent (5%) of the total estimated cost of this contract.

(b) In the case of a proposed subcontract which (i) is on a cost, cost-plus-a-fee, time and material, or labor-hour basis and which would involve an estimated amount in excess of \$10,000, including

any fee; or (ii) is proposed to exceed \$100,000; or (iii) is one of a number of subcontracts under this contract with a single subcontractor for the same or related supplies or services which, in the aggregate are expected to exceed \$100,000; the advance notification required by (a) above shall include:

(1) a description of the supplies or services to be called for by the subcontract;

(2) identification of the proposed subcontractor and an explanation of why and how the proposed subcontractor was selected, including the degree of competition obtained;

(3) the proposed subcontract price, together with the Contractor's cost of price analysis thereof, including current, complete and correct cost or pricing data accompanied, except when the requirement is specifically waived by the Contracting Officer, by a certificate from the subcontractor to the effect that all cost or pricing data has been considered by the subcontractor in preparing his proposal and that such data is current, and has been provided the Contractor; and

(4) identification of the type of contract proposed to be used.

(c) The Contractor shall not, without the prior written consent of the Contracting Officer, place any subcontract which (i) is on a cost or cost-plus-a-fee basis, or (ii) is on a fixed-price basis exceeding in dollar amount either \$25,000 or five per cent (5%) of the total estimated cost of this contract, or (iii) provides for the fabrication, purchase, rental, installation, or other acquisition, of any item of industrial facilities, or of special tooling having a value in excess of \$1,000, or (iv) is on a time and material or labor-hour basis, or (v) has experimental, developmental, or research work as one of its purposes. The Contracting Officer may, in his discretion, ratify in writing any such subcontract; such action shall constitute the consent of the Contracting Officer as required by this paragraph (c).

(d) The Contractor agrees that no subcontract placed under this contract shall provide for payment on a cost-plus-a-percentage-of-cost basis.

(e) The Contracting Officer may, in his discretion, specifically approve in writing any of the provisions of a subcontract. However, such approval or the consent of the Contracting Officer obtained as required by this clause shall not be construed to constitute a determination of the allowability of any cost under this contract, unless such approval specifically provides that it constitutes a determination of the allowability of such cost.

(f) The Contractor shall give the Contracting Officer immediate notice in writing of any action or suit filed, and prompt notice of any claim made against the Contractor by any subcontractor or vendor which, in the opinion of the Contractor, may result in litigation, related in any way to this contract with respect to which the Contractor may be entitled to reimbursement from the Government.

(g) Notwithstanding (c) above the Contractor may enter into subcontracts within (ii), or, if the subcontract is for special tooling, within (iii), of (c) above, without the prior written consent of the Contracting Officer if the Contracting Officer has, in writing, approved the Contractor's purchasing system and the subcontract is within the limitations of such approval.

(h) The Contractor shall (1) insert in each price redetermination or incentive price revision subcontract hereunder the substance of the "Limitation on Payments" provision set forth in paragraph (f) of the clause prescribed by paragraph 7-108 of the Armed Services Procurement Regulation, including subparagraph (4) thereof, modified to omit mention of the Government and reflect the position of the Contractor as purchaser and of the subcontractor as vendor, and to omit that portion of subparagraph (3) thereof relating to tax credits, and (2) include in each cost-reimbursement type subcontract hereunder a requirement that each price redetermination and incentive price revision subcontract thereunder will contain the substance of the "Limitation on Payments" provision, including subparagraph (4) thereof, modified as outlined in (i) above.

(i) To facilitate small business participation in subcontracting under this contract, the Contractor agrees to provide progress payments on the fixed-price types of subcontracts of those subcontractors which are small business concerns, in conformity with the standards for customary progress payments stated in paragraphs 503 and 514 of Appendix E of the Armed Services Procurement Regulation, as in effect on the date of this contract. The Contractor further agrees that the need for such progress payments will not be considered as a handicap or adverse factor in the award of subcontracts.

## **9. UTILIZATION OF SMALL BUSINESS CONCERNS (Jan. 1958)**

(a) It is the policy of the Government as declared by the Congress that a fair proportion of the purchases and contracts for supplies and services for the Government be placed with small business concerns.

(b) The Contractor agrees to accomplish the maximum amount of subcontracting to small business concerns that the Contractor finds to be consistent with the efficient performance of this contract.

## **10. TERMINATION (Jul. 1962)**

(a) The performance of work under the contract may be terminated by the Government in accordance with this clause in whole, or from time to time in part:

(1) whenever the Contractor shall default in performance of this contract in accordance with its terms (including in the term "default" any such

failure by the Contractor to make progress in the prosecution of the work hereunder as endangers such performance), and shall fail to cure such default within a period of ten days (or such longer periods as the Contracting Officer may allow) after receipt from the Contracting Officer of a notice specifying the default; or

(ii) whenever for any reason the Contracting Officer shall determine that such termination is in the best interests of the Government.

Any such termination shall be effected by delivery to the Contractor of a Notice of Termination specifying whether termination is for the default of the Contractor or for the convenience of the Government, the extent to which performance of work under the contract is terminated, and the date upon which such termination becomes effective. If, after notice of termination of this contract for default under (i) above, it is determined for any reason that the Contractor was not in default pursuant to (i), or that the Contractor's failure to perform or to make progress in performance is due to causes beyond the control and without the fault or negligence of the Contractor pursuant to the provisions of the clause of this contract relating to excusable delays, the Notice of Termination shall be deemed to have been issued under (ii) above, and the rights and obligations of the parties hereto shall in such event be governed accordingly.

(b) After receipt of a Notice of Termination and except as otherwise directed by the Contracting Officer, the Contractor shall:

(i) stop work under the contract on the date and to the extent specified in the Notice of Termination;

(ii) place no further orders or subcontracts for materials, services, or facilities, except as may be necessary for completion of such portion of the work under the contract as is not terminated;

(iii) terminate all orders and subcontracts to the extent that they relate to the performance of work terminated by the Notice of Termination;

(iv) assign to the Government, in the manner and to the extent directed by the Contracting Officer, all of the right, title, and interest of the Contractor under the orders or subcontracts so terminated, in which case the Government shall have the right, in its discretion, to settle or pay any or all claims arising out of the termination of such orders and subcontracts;

(v) with the approval or ratification of the Contracting Officer, to the extent he may require, which approval or ratification shall be final and conclusive for all purposes of this clause, settle all outstanding liabilities and all claims arising out of such termination of orders and subcontracts, the cost of which would be reimbursable in whole or in part, in accordance with the provisions of this contract;

(vi) transfer title (to the extent that title has not already been transferred) and, in the manner, to the extent, and at times directed by the Contracting Officer, deliver to the Government (A) the fabricated or unfabricated parts, work in process, completed work, supplies, and other material produced as a part of, or acquired in respect of the performance of, the work terminated by the Notice of Termination, (B) the completed or partially completed plans, drawings, information, and other property which, if the contract had been completed, would be required to be furnished to the Government, and (C) the jigs, dies, and fixtures, and other special tools and tooling acquired or manufactured for the performance of this contract for the cost of which the Contractor has been or will be reimbursed under this contract;

(vii) use his best efforts to sell in the manner, at the times, to the extent, and at the price or prices directed or authorized by the Contracting Officer, any property of the types referred to in (vi) above; **provided**, however, that the Contractor (A) shall not be required to extend credit to any purchaser, and (B) may acquire any such property under the conditions prescribed by and at a price or prices approved by the Contracting Officer; and **provided further** that the proceeds of any such transfer or disposition shall be applied in reduction of any payments to be made by the Government to the Contractor under this contract or shall otherwise be credited to the price or cost of the work covered by this contract or paid in such other manner as the Contracting Officer may direct;

(viii) complete performance of such part of the work as shall not have been terminated by the Notice of Termination; and

(ix) take such action as may be necessary, or as the Contracting Officer may direct, for the protection and preservation of the property related to this contract which is in the possession of Contractor in which the Government has or may acquire an interest.

The Contractor shall proceed immediately with the performance of the above obligations notwithstanding any delay in determining or adjusting the amount of the fee, or any item of reimbursable cost, under this clause. At any time after expiration of the plant clearance period, as defined in Section VIII, Armed Services Procurement Regulation, as it may be amended from time to time, the Contractor may submit to the Contracting Officer a list, certified as to quantity and quality, of any or all items of termination inventory not previously disposed of, exclusive of items the disposition of which has been directed or authorized by the Contracting Officer, and may request the Government to remove such items or enter into a storage agreement covering them. Not later than fifteen (15) days thereafter, the Government will accept such items and remove them or enter into a storage



agreement covering the same; **provided**, that the list submitted shall be subject to verification by the Contracting Officer upon removal of the items, or if the items are stored, within forty-five (45) days from the date of submission of the list, and any necessary adjustment to correct the list as submitted shall be made prior to final settlement.

(c) After receipt of a Notice of Termination, the Contractor shall submit to the Contracting Officer his termination claim in the form and with the certification prescribed by the Contracting Officer. Such claim shall be submitted promptly but in no event later than one year from the effective date of termination, unless one or more extensions in writing are granted by the Contracting Officer, upon request of the Contractor made in writing within such one year period or authorized extension thereof. However, if the Contracting Officer determines that the facts justify such action, he may receive and act upon any such termination claim at any time after such one year period or any extension thereof. Upon failure of the Contractor to submit his termination claim within the time allowed, the Contracting Officer may, subject to any Settlement Review Board approvals required by Section VIII of the Armed Services Procurement Regulation in effect as of the date of execution of this contract, determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall thereupon pay to the Contractor the amount so determined.

(d) Subject to the provisions of paragraph (c), and subject to any Settlement Review Board approvals required by Section VIII of the Armed Services Procurement Regulation in effect as of the date of execution of this contract, the Contractor and the Contracting Officer may agree upon the whole or any part of the amount or amounts to be paid (including an allowance for the fee) to the Contractor by reason of the total or partial termination of work pursuant to this clause. The contract shall be amended accordingly, and the Contractor shall be paid the agreed amount.

(e) In the event of the failure of the Contractor and the Contracting Officer to agree in whole or in part, as provided in paragraph (d), as to the amounts with respect to costs and fee, or as to the amount of the fee, to be paid to the Contractor in connection with the termination of work pursuant to this clause, the Contracting Officer shall, subject to any Settlement Review Board approvals required by Section VIII of the Armed Services Procurement Regulation in effect as of the date of execution of this contract, determine, on the basis of information available to him, the amount, if any, due to the Contractor by reason of the termination and shall pay to the Contractor the amount determined as follows:

(i) if the settlement includes cost and fee—

(A) there shall be included therein all costs and expenses reimbursable in accordance with this contract, not previously paid to the Contractor for the performance of this contract prior to the effective date of the Notice of Termination, and such of these costs as may continue for a reasonable time thereafter with the approval of or as directed by the Contracting Officer; **provided**, however, that the Contractor shall proceed as rapidly as practicable to discontinue such costs;

(B) there shall be included therein so far as not included under (A) above, the cost of settling and paying claims arising out of the termination of work under subcontracts or orders, as provided in paragraph (b) (v) above, which are properly chargeable to the terminated portion of the contract;

(C) there shall be included therein the reasonable costs of settlement, including accounting, legal, clerical, and other expenses reasonably necessary for the preparation of settlement claims and supporting data with respect to the terminated portion of the contract and for the termination and settlement of subcontracts thereunder, together with reasonable storage, transportation, and other costs incurred in connection with the protection or disposition of termination inventory; **provided**, however, that if the termination is for default of the Contractor there shall not be included any amounts for the preparation of the Contractor's settlement proposal; and

(D) there shall be included therein a portion of the fee payable under the contract determined as follows—

(I) in the event of the termination of this contract for the convenience of the Government and not for the default of the Contractor, there shall be paid a percentage of the fee equivalent to the percentage of the completion of work contemplated by the contract, less fee payments previously made hereunder; or

(II) in the event of termination of this contract for the default of the Contractor, the total fee payable shall be such proportionate part of the fee (or, if this contract calls for articles of different types, of such part of the fee as is reasonably allocable to the type of article under consideration) as the total number of articles delivered to and accepted by the Government bears to the total number of articles of a like kind called for by this contract;

if the amount determined under this subparagraph (i) is less than the total payment theretofore made to the Contractor, the Contractor shall repay to the Government the excess amount; or

(ii) if the settlement includes only the fee, the amount thereof will be determined in accordance with subparagraph (i) (D) above.

(f) The Contractor shall have the right of appeal, under the clause of this contract entitled "Disputes," from any determination made by the Contracting Officer under paragraphs (c) or (e) above, except that if the Contractor has failed to submit his claim within the time provided in paragraph (c) above and has failed to request extension of such time, he shall have no such right of appeal. In any case where the Contracting Officer has made a determination of the amount due under paragraph (c) or (e) above, the Government shall pay to the Contractor the following: (i) if there is no right of appeal hereunder or if no timely appeal has been taken, the amount so determined by the Contracting Officer, or (ii) if an appeal has been taken, the amount finally determined on such appeal.

(g) In arriving at the amount due the Contractor under this clause there shall be deducted (i) all unliquidated advance or other payments theretofore made to the Contractor, applicable to the terminated portion of this contract, (ii) any claim which the Government may have against the Contractor in connection with this contract, and (iii) the agreed price for, or the proceeds of sale of, any materials, supplies, or other things acquired by the Contractor or sold pursuant to the provisions of this clause and not otherwise recovered by or credited to the Government.

(h) In the event of a partial termination, the portion of the fee which is payable with respect to the work under the continued portion of the contract shall be equitably adjusted by agreement between the Contractor and the Contracting Officer, and such adjustment shall be evidenced by an amendment to this contract.

(i) The Government may from time to time, under such terms and conditions as it may prescribe, make partial payments and payments on account against costs incurred by the Contractor in connection with the terminated portion of the contract whenever in the opinion of the Contracting Officer the aggregate of such payments shall be within the amount to which the Contractor will be entitled hereunder. If the total of such payments is in excess of the amount finally determined to be due under this clause, such excess shall be payable by the Contractor to the Government upon demand, together with interest computed at the rate of 6 percent per annum, for the period from the date such excess payment is received by the Contractor to the date on which such excess is repaid to the Government; **provided**, however, that no interest shall be charged with respect to any such excess payment attributable to a reduction in the Contractor's claim by reason of retention or other disposition of termination inventory until ten days after the date of such retention or disposition, or such later date as determined by the Contracting Officer by reason of the circumstances.

(j) The provisions of this clause relating to the fee shall be inapplicable if this contract does not provide for payment of a fee.

#### 11. DISPUTES (Jan. 1958)

(a) Except as otherwise provided in this contract, any dispute concerning a question of fact arising under this contract which is not disposed of by agreement shall be decided by the Contracting Officer, who shall reduce his decision to writing and mail or otherwise furnish a copy thereof to the Contractor. The decision of the Contracting Officer shall be final and conclusive unless, within 30 days from the date of receipt of such copy, the Contractor mails or otherwise furnishes to the Contracting Officer a written appeal addressed to the Secretary. The decision of the Secretary or his duly authorized representative for the determination of such appeals shall be final and conclusive unless determined by a court of competent jurisdiction to have been fraudulent, or capricious, or arbitrary, or so grossly erroneous as necessarily to imply bad faith, or not supported by substantial evidence. In connection with any appeal proceeding under this clause, the Contractor shall be afforded an opportunity to be heard and to offer evidence in support of his appeal. Pending final decision of a dispute hereunder, the Contractor shall proceed diligently with the performance of the contract and in accordance with the Contracting Officer's decision.

(b) This "Disputes" clause does not preclude consideration of law questions in connection with decisions provided for in paragraph (a) above; **provided**, that nothing in this contract shall be construed as making final the decision of any administrative official, representative, or board on a question of law.

#### 12. BUY AMERICAN ACT (Jul. 1960)

(a) In acquiring end products, the Buy American Act (41 U.S.C. 10a-d) provides that the Government give preference to domestic source end products. For the purpose of this clause:

(i) "components" means those articles, materials, and supplies, which are directly incorporated in the end products;

(ii) "end products" means those articles, materials, and supplies, which are to be acquired under this contract for public use; and

(iii) a "domestic source end product" means (A) an unmanufactured end product which has been mined or produced in the United States and (B) an end product manufactured in the United States if the cost of the components thereof which are mined, produced, or manufactured in the United States or Canada exceeds 50 percent of the cost of all its components. For the purposes of this (a) (iii) (B), components of foreign origin of the same

type or kind as the products referred to in (b) (ii) or (iii) of this clause shall be treated as components mined, produced, or manufactured in the United States.

(b) The Contractor agrees that there will be delivered under this contract only domestic source end products, except end products:

- (i) which are for use outside the United States;
- (ii) which the Government determines are not mined, produced, or manufactured in the United States in sufficient and reasonably available commercial quantities and of a satisfactory quality;
- (iii) as to which the Secretary determines the domestic preference to be inconsistent with the public interest; or
- (iv) as to which the Secretary determines the cost to the Government to be unreasonable.

(The foregoing requirements are administered in accordance with Executive Order No. 10582, dated December 17, 1954.)

### **13. CONVICT LABOR (Mar. 1949)**

In connection with the performance of work under this contract, the Contractor agrees not to employ any person undergoing sentence of imprisonment at hard labor.

### **14. WALSH-HEALEY PUBLIC CONTRACTS ACT (Jan. 1958)**

If this contract is for the manufacture or furnishing of materials, supplies, articles, or equipment in an amount which exceeds or may exceed \$10,000 and is otherwise subject to the Walsh-Healey Public Contracts Act, as amended (41 U.S.C. 35-45), there are hereby incorporated by reference all representations and stipulations required by said Act and regulations issued thereunder by the Secretary of Labor, such representations and stipulations being subject to all applicable rulings and interpretations of the Secretary of Labor which are now or may hereafter be in effect.

### **15. NONDISCRIMINATION IN EMPLOYMENT (Jul. 1962)**

The following clause is applicable unless this contract is exempt under the rules and regulations of the President's Committee on Equal Employment Opportunity issued pursuant to Executive Order No. 10925 of March 6, 1961 (26 FR 1977).)

In connection with the performance of work under this contract, the Contractor agrees as follows:

(a) The Contractor will not discriminate against any employee or applicant for employment because of race, creed, color, or national origin. The Contractor will take affirmative action to ensure that applicants are employed, and that employees are treated during employment, without regard to their race, creed, color, or national origin. Such action

shall include, but not be limited to, the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Contracting Officer setting forth the provisions of this Nondiscrimination in Employment clause.

(b) The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, creed, color, or national origin.

(c) The Contractor will send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the Contracting Officer, advising the said labor union or workers' representative of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(d) The Contractor will comply with all provisions of Executive Order No. 10925 of March 6, 1961, and of the rules, regulations, and relevant orders of the President's Committee on Equal Employment Opportunity in effect as of the date of this contract.

(e) The Contractor will furnish all information and reports required by Executive Order No. 10925 of March 6, 1961, and by the rules, regulations, and orders of the said Committee, or pursuant thereto, and will permit access to his books, records, and accounts by the contracting agency and the Committee for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(f) In the event of the Contractor's noncompliance with the Nondiscrimination in Employment clause of this contract or with any of the said rules, regulations, or orders, this contract may be cancelled in whole or in part and the Contractor may be declared ineligible for further Government contracts in accordance with procedures authorized in Executive Order No. 10925 of March 6, 1961, and such other sanctions may be imposed and remedies invoked as provided in the said Executive Order or by rule, regulation, or order of the President's Committee on Equal Employment Opportunity, or as otherwise provided by law.

(g) The Contractor will include the provisions of the foregoing paragraphs (a) through (f) in every subcontract or purchase order unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to Section 303 of Executive Order No. 10925 of March 6, 1961, so that such provisions will be

binding upon each subcontractor or vendor.\* The Contractor will take such action with respect to any subcontract or purchase order as the contracting agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: **Provided**, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the contracting agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

**16. OFFICIALS NOT TO BENEFIT (Jul. 1949)**

No member of or delegate to Congress, or resident commissioner, shall be admitted to any share or part of this contract, or to any benefit that may arise therefrom; but this provision shall not be construed to extend to this contract if made with a corporation for its general benefit.

**17. COVENANT AGAINST CONTINGENT FEES (Jan. 1958)**

The Contractor warrants that no person or selling agency has been employed or retained to solicit or secure this contract upon an agreement or understanding for a commission, percentage, brokerage, or contingent fee, excepting bona fide employees or bona fide established commercial or selling agencies maintained by the Contractor for the purpose of securing business. For breach or violation of this warranty the Government shall have the right to annul this contract without liability or in its discretion, to deduct from the contract price or consideration, or otherwise recover, the full amount of such commission, percentage, brokerage or contingent fee.

**18. AUTHORIZATION AND CONSENT (Jan. 1961)**

The Government hereby gives its authorization and consent for all use and manufacture of any invention described in and covered by a patent of the United States in the performance of this contract or any part hereof or any amendment hereto or any

\* The President's Committee on Equal Employment Opportunity interprets the first sentence of paragraph (g) to mean that the Contractor will include the provisions of the foregoing paragraphs (a) through (f) in every first-tier subcontract or purchase order, so that such provisions will be binding upon each such subcontractor or vendor, and will require each first-tier subcontractor or vendor similarly to include the provisions of paragraphs (a) through (f) in any subcontract or purchase order which he places, unless exempted by rules, regulations, or orders of the President's Committee on Equal Employment Opportunity issued pursuant to section 303 of Executive Order 10925 of March 6, 1961.

subcontract hereunder (including any lower-tier subcontract).

**19. NOTICE AND ASSISTANCE REGARDING PATENT AND COPYRIGHT INFRINGEMENT (Feb. 1962)**

The provisions of this clause shall be applicable only if the amount of this contract exceeds \$10,000.

(a) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of patent or copyright infringement based on the performance of this contract of which the Contractor has knowledge.

(b) In the event of any suit against the Government, or any claim against the Government made before suit has been instituted, on account of any alleged patent or copyright infringement arising out of the performance of this contract or out of the use of any supplies furnished or work or services performed hereunder, the Contractor shall furnish to the Government, upon request, all evidence and information in possession of the Contractor pertaining to such suit or claim. Such evidence and information shall be furnished at the expense of the Government except in those cases in which the Contractor has agreed to indemnify the Government against the claim being asserted.

**20. PATENT RIGHTS (LICENSE) (Apr. 1962)**

(a) As used in this clause, the following terms shall have the meanings set forth below:

(i) The term "Subject Invention" means any invention, improvement, or discovery (whether or not patentable) conceived or first actually reduced to practice either—

(A) in the performance of the experimental, developmental, or research work called for or required under this contract; or

(B) in the performance of any experimental, developmental, or research work relating to the subject matter of this contract which was done upon an understanding in writing that a contract would be awarded; **provided**, that the term "Subject Invention" shall not include any invention which is specifically identified and listed in the Schedule for the purpose of excluding it from the license granted by this clause.

(ii) The term "Technical Personnel" means any person employed by or working under contract with the Contractor (other than a subcontractor whose responsibilities with respect to rights accruing to the Government in inventions arising under subcontracts are set forth in (g) and (h) below), who, by reason of the nature of his duties in connection with the performance of this contract, would reasonably be expected to make inventions.

(iii) The terms "subcontract" and "subcontractor" mean any subcontract or subcontractor of the Contractor, and any lower-tier subcontract or subcontractor under this contract.

(b) (1) The Contractor agrees to and does hereby grant to the Government an irrevocable, nonexclusive, and royalty-free license to practice, and cause to be practiced by or for the United States Government, throughout the world, each Subject Invention in the manufacture, use, and disposition according to law, of any article or material, and in the use of any method. Such license (i) shall be nontransferable, except that the Government shall have the right to grant sublicenses to any foreign government or international organization specifically for use in programs established by International Agreements for research, development or production of weapons or equipment for mutual defense, and (ii) shall include the practice of Subject Invention in the manufacture, use, and disposition of any article or material, in the use of any method, or in the performance of any service acquired by or for the Government or with funds derived through the Military Assistance Program of the Government or otherwise through the Government.

(b) (1) **(This paragraph applies if this contract has as one of its purposes the performance of research and development work under a space program, project or task and paragraph (b) (1) above is made inapplicable.)** The Contractor agrees to and does hereby grant to the Government an irrevocable, nonexclusive, and royalty-free license to practice, and cause to be practiced by or for the United States Government, throughout the world, each Subject Invention in the manufacture, use, and disposition according to law, of any article or material, and in the use of any method. Such license (i) shall be nontransferable, except that the Government shall have (a) the right to grant sublicenses to any foreign government or international organization specifically for use in programs established by International Agreements for research, development or production of weapons or equipment for mutual defense and (b) the right to grant sublicenses to others, under such terms and conditions as may be prescribed, for the practice of any Subject Invention throughout the world in the design, development, manufacture, operation, maintenance and testing of communications satellite systems, and of equipment, components, and ground tracking, transmitting and receiving facilities therefor, and (ii) shall include the practice of Subject Invention in the manufacture, use, and disposition of any article or material, in the use of any method or in the performance of any service acquired by or for the Government or with funds derived through the Military Assistance Program of the Government or otherwise through the Government.

(2) With respect to:

(i) any Subject Invention made by other than Technical Personnel; and

(ii) any Subject Invention conceived prior to, but first actually reduced to practice in the course of, any of the experimental, developmental, or research work specified in (a) (1) above;

the obligation of the Contractor to grant a license as provided in (b) (1) above, to convey title as provided in (d) (ii) (B) or (d) (iv) below, and to convey foreign rights as provided in (e) below, shall be limited to the extent of the Contractor's right to grant the same without incurring any obligation to pay royalties or other compensation to others solely on account of said grant. Nothing contained in this Patent Rights clause shall be deemed to grant any license under any invention other than a Subject Invention.

(c) The Contractor shall furnish to the Contracting Officer the following information and reports concerning Subject Inventions which reasonably appear to be patentable:

(i) a written disclosure promptly after conception or first actual reduction to practice of each such Invention together with a written statement specifying whether or not a United States patent application claiming the Invention has been or will be filed by or on behalf of the Contractor;

(ii) interim reports at least every twelve months, commencing with the date of this contract, each listing all such Inventions conceived or first actually reduced to practice more than three months prior to the date of the report, and not listed on a prior interim report, or certifying that there are no such unreported Inventions; and

(iii) prior to final settlement of this contract, a final report listing all such Inventions including all those previously listed in interim reports.

(d) In connection with each Subject Invention referred to in (c) (1) above, the Contractor shall do the following:

(i) if the Contractor specifies that a United States patent application claiming such Invention will be filed, the Contractor shall file or cause to be filed such application in due form and time; however, if the Contractor, after having specified that such an application would be filed, decides not to file or cause to be filed said application, the Contractor shall so notify the Contracting Officer at the earliest practicable date and in any event not later than eight months after first publication, public use or sale.

(ii) if the Contractor specifies that a United States patent application claiming such Invention has not been filed and will not be filed (or having specified that such an application will be filed thereafter notifies the Contracting Officer to the contrary), the Contractor shall:

(A) inform the Contracting Officer in writing at the earliest practicable date of any publication of such Invention made by or known to the Contractor or, where applicable, of any contemplated publication by the Contractor, stating the date and identity of such publication or contemplated publication; and

(B) convey to the Government the Contractor's entire right, title, and interest in such Invention by delivering to the Contracting Officer upon written request such duly executed instruments (prepared by the Government) of assignment and application, and such other papers as are deemed necessary to vest in the Government the Contractor's right, title, and interest aforesaid, and the right to apply for and prosecute patent applications covering such Invention throughout the world, subject, however, to the rights of the Contractor in foreign applications as provided in (e) below, and subject further to the reservation of a nonexclusive and royalty-free license to the Contractor (and to his existing and future associated and affiliated companies, if any, within the corporate structure of which the Contractor is a part) which license shall be assignable to the successor of that part of the Contractor's business to which such Invention pertains;

(iii) the Contractor shall furnish promptly to the Contracting Officer on request an irrevocable power of attorney to inspect and make copies of each United States patent application filed by or on behalf of the Contractor covering any such Invention;

(iv) in the event the Contractor, or those other than the Government deriving rights from the Contractor, elects not to continue prosecution of any such United States patent application filed by or on behalf of the Contractor, the Contractor shall so notify the Contracting Officer not less than sixty days before the expiration of the response period and, upon written request, deliver to the Contracting Officer such duly executed instruments (prepared by the Government) as are deemed necessary to vest in the Government the Contractor's entire right, title, and interest in such Invention and the application, subject to the reservation as specified in (d)(ii) above; and

(v) the Contractor shall deliver to the Contracting Officer duly executed instruments fully confirmatory of any license rights herein agreed to be granted to the Government.

(e) The Contractor, or those other than the Government deriving rights from the Contractor, shall, as between the parties hereto, have the exclusive right to file applications on Subject Inventions in each foreign country within:

(i) nine months from the date a corresponding United States application is filed;

(ii) six months from the date permission is granted to file foreign applications where such filing had been prohibited for security reasons; or

(iii) such longer period as may be approved by the Contracting Officer.

The Contractor shall, upon written request of the Contracting Officer convey to the Government the Contractor's entire right, title, and interest in each Subject Invention in each foreign country in which an application has not been filed within the time above specified, subject to the reservation of a

nonexclusive and royalty-free license to the Contractor together with the right of the Contractor to grant sublicenses, which license and right shall be assignable to the successor of that part of the Contractor's business to which the Subject Invention pertains.

(f) If the Contractor fails to deliver to the Contracting Officer the interim reports required by (c)(ii) above, or fails to furnish the written disclosures for all Subject Inventions required by (c)(i) above shown to be due in accordance with any interim report delivered under (c)(ii) or otherwise known to be unreported, there shall be withheld from payment until the Contractor shall have corrected such failures either ten per cent (10%) of the amount of this contract, as from time to time amended, or five thousand dollars (\$5,000), whichever is less. After payment of eighty per cent (80%) of the amount of this contract, as from time to time amended, payment shall be withheld until a reserve of either ten per cent (10%) of such amount, or five thousand dollars (\$5,000), whichever is less, shall have been set aside, such reserve or balance thereof to be retained until the Contractor shall have furnished to the Contracting Officer:

(i) the final report required by (c)(iii) above;

(ii) written disclosures for all Subject Inventions required by (c)(i) above which are shown to be due in accordance with interim reports delivered under (c)(ii) above, or in accordance with such final reports, or are otherwise known to be unreported; and

(iii) the information as to any subcontractor required by (h) below.

The maximum amount which may be withheld under this paragraph (f) shall not exceed ten per cent (10%) of the amount of this contract or five thousand dollars (\$5,000), whichever is less, and no amount shall be withheld under this paragraph (f) when the amount specified by this paragraph (f) is being withheld under other provisions of this contract. The withholding of any amount or subsequent payment thereof to the Contractor shall not be construed as a waiver of any rights accruing to the Government under this contract. This paragraph (f) shall not be construed as requiring the Contractor to withhold any amounts from a subcontractor to enforce compliance with the patent provisions of a subcontract.

(g) The Contractor shall, unless otherwise authorized by the Contracting Officer as hereafter provided, include a patent rights clause containing all the provisions of this Patent Rights Clause except provision (f) in any subcontract hereunder of three thousand dollars (\$3,000) or more having experimental, developmental, or research work as one of its purposes. In the event of refusal by a subcontractor to accept such a patent rights clause, the Contractor (i) shall promptly submit a written report to the Contracting Officer setting forth the subcontractor's reasons for such refusal and other

pertinent information which may expedite disposition of the matter, and (ii) shall not proceed with the subcontract without the written authorization of the Contracting Officer. Reports, instruments, and other information required to be furnished by a subcontractor to the Contracting Officer under the provisions of such a patent rights clause in a subcontract hereunder may, upon mutual consent of the Contractor and the subcontractor (or by direction of the Contracting Officer) be furnished to the Contractor for transmission to the Contracting Officer.

(h) The Contractor shall, at the earliest practicable date, notify the Contracting Officer in writing of any subcontract containing one or more patent rights clauses; furnish the Contracting Officer a copy of each of such clauses; and notify the Contracting Officer when such subcontract is completed. It is understood that with respect to any subcontract clause granting rights to the Government in Subject Inventions, the Government is a third party beneficiary; and the Contractor hereby assigns to the Government all the rights that the Contractor would have to enforce the subcontractor's obligations for the benefit of the Government with respect to Subject Inventions. If there are no subcontracts containing patent rights clauses, a negative report is required. The Contractor shall not be obligated to enforce the agreements of any subcontractor hereunder relating to the obligations of the subcontractor to the Government in regard to Subject Inventions.

(i) The Contractor recognizes that the Government, or a foreign government with funds derived through the Military Assistance Program or otherwise through the United States Government, may contract for property or services with respect to which the vendor may be liable to the Contractor for royalties for the use of a Subject Invention on account of such a contract. The Contractor further recognizes that it is the policy of the Government not to pay in connection with its contracts, or to allow to be paid in connection with contracts made with funds derived through the Military Assistance Program or otherwise through the United States Government, charges for use of patents in which the Government holds a royalty-free license. In recognition of this policy, the Contractor agrees to participate in and make appropriate arrangements for the exclusion of such charges from such contracts or for the refund of amounts received by the Contractor with respect to any such charges not so excluded.

## 21. DATA (Feb. 1962)

(a) The term "Subject Data" as used herein includes writings, sound recordings, pictorial reproductions, drawings or other graphical representations, and works of any similar nature (whether or not copyrighted) which are specified to be delivered under this contract. The term does not include

financial reports, cost analyses, and other information incidental to contract administration.

(b) The Contractor agrees to and does hereby grant to the Government, and to its officers, agents, and employees acting within the scope of their official duties, a royalty-free, nonexclusive and irrevocable license throughout the world for Government purposes to publish, translate, reproduce, deliver, perform, dispose of, and to authorize others so to do, all Subject Data now or hereafter covered by copyright.

(c) The Contractor shall not include in the Subject Data any copyrighted matter, without the written approval of the Contracting Officer, unless he provides the Government with the written permission of the copyright owner for the Government to use such copyrighted matter in the manner provided in paragraph (b) above.

(d) The Contractor shall report to the Contracting Officer, promptly and in reasonable written detail, each notice or claim of copyright infringement received by the Contractor with respect to all Subject Data delivered under this contract.

(e) Nothing contained in this clause shall imply a license to the Government under any patent or be construed as affecting the scope of any license or other right otherwise granted to the Government under any patent.

(f) Unless otherwise limited below, the Government may duplicate, use, and disclose in any manner and for any purpose whatsoever, and have others so do, all Subject Data delivered under this contract.

(g) The Contractor recognizes that the Government, or a foreign government with funds derived through the Mutual Security Program or otherwise through the United States Government, may contract for property or services with respect to which the vendor may be liable to the Contractor for charges for the use of Subject Data on account of such a contract. The Contractor further recognizes that it is the policy of the Government not to pay in connection with its contracts, or to allow to be paid in connection with contracts made with funds derived through the Mutual Security Program or otherwise through the United States Government, charges for data which the Government has a right to use and disclose to others, or which is in the public domain, or with respect to which the Government has been placed in possession without restrictions upon its use and disclosure to others. This policy does not apply to reasonable reproduction, handling, mailing, and similar administrative costs incident to the furnishing of such data. In recognition of this policy, the Contractor agrees to participate in and make appropriate arrangements for the exclusion of such charges from such contracts or for the refund of amounts received by the Contractor with respect to any such charges not so excluded.



(h) Notwithstanding any provisions of this contract concerning inspection and acceptance, the Government shall have the right at any time to modify, remove, obliterate or ignore any marking not authorized by the terms of this contract on any piece of Subject Data furnished under this contract.

(i) Data need not be furnished for standard commercial items or services which are normally or have been sold or offered to the public commercially by any supplier and which are incorporated as component parts in or to be used with the product or process being developed if in lieu thereof identification of source and characteristics (including performance specifications, when necessary) sufficient to enable the Government to procure the part or an adequate substitute, are furnished; and further, "proprietary data" need not be furnished for other items which were developed at private expense and previously sold or offered for sale, including minor modifications thereof, which are incorporated as component parts in or to be used with the product or process being developed, if in lieu thereof the Contractor shall identify such other items and that "proprietary data" pertaining thereto which is necessary to enable reproduction or manufacture of the item or performance of the process. For the purpose of this clause "proprietary data" means data providing information concerning the details of a Contractor's secrets of manufacture, such as may be contained in but not limited to its manufacturing methods or processes, treatment and chemical composition of materials, plant layout and tooling, to the extent that such information is not disclosed by inspection or analysis of the product itself and to the extent that the Contractor has protected such information from unrestricted use by others. (Oct. 1958)

## **22. MILITARY SECURITY REQUIREMENTS** (Jun. 1958)

(a) The provisions of this clause shall apply to the extent that this contract involves access to information classified "Confidential" including "Confidential—Modified Handling Authorized" or higher.

(b) The Government shall notify the Contractor of the security classification of this contract and the elements thereof, and of any subsequent revisions in such security classification, by the use of a Security Requirements Check List (DD Form 254), or other written notification.

(c) To the extent the Government has indicated as of the date of this contract or thereafter indicates security classification under this contract as provided in paragraph (b) above, the Contractor shall safeguard all classified elements of this contract and shall provide and maintain a system of security controls within his own organization in accordance with the requirements of—

(i) the Security Agreement (DD Form 441), including the Department of Defense Industrial Security Manual for Safeguarding Classified Information as in effect on the date of this contract, and any modification to the Security Agreement for the purpose of adapting the Manual to the Contractor's business; and

(ii) any amendments to said Manual made after the date of this contract, notice of which has been furnished to the Contractor by the Security Office of the Military Department having security cognizance over the facility.

(d) Representatives of the Military Department having security cognizance over the facility and representatives of the contracting Military Department shall have the right to inspect at reasonable intervals the procedures, methods, and facilities utilized by the Contractor in complying with the security requirements under this contract. Should the Government, through these representatives, determine that the Contractor is not complying with the security requirements of this contract the Contractor shall be informed in writing by the Security Office of the cognizant Military Department of the proper action to be taken in order to effect compliance with such requirements.

(e) If, subsequent to the date of this contract, the security classifications or security requirements under this contract are changed by the Government as provided in this clause, and if such change causes an increase or decrease in the estimated cost of performance of this contract, the estimated cost and fixed fee shall, to the extent appropriate, be subject to an equitable adjustment. Any such equitable adjustment shall be accomplished in the manner set forth in the "Changes" clause in this contract.

(f) The Contractor agrees to insert, in all subcontracts hereunder which involve access to classified information, provisions which shall conform substantially to the language of this clause, including this paragraph (f) but excluding paragraph (e) of this clause. The Contractor may insert in any such subcontract, and any such subcontract entered into thereunder may contain, in lieu of paragraph (e) of this clause, provisions which permit equitable adjustments to be made in the subcontract price or in the estimated cost and fixed fee of the subcontract (as appropriate to the type of subcontract involved) on account of changes in security classifications or requirements made under the provisions of this clause subsequent to the date of the subcontract involved. (Oct. 1953)

(g) The Contractor also agrees that he shall determine that any subcontractor proposed by him for the furnishing of supplies and services which will involve access to classified information in the Contractor's custody has been granted an appropriate facility security clearance, which is still in effect, prior to being accorded access to such classified information.



**23. GOVERNMENT PROPERTY (Aug. 1961)**

(a) The Government shall deliver to the Contractor, for use in connection with and under the terms of this contract, the property described in the Schedule or specifications, together with such related data and information as the Contractor may request and as may reasonably be required for the intended use of such property (hereinafter referred to as "Government-furnished Property"). The delivery or performance dates for the supplies or services to be furnished by the Contractor under this contract are based upon the expectation that Government-furnished Property suitable for use will be delivered to the Contractor at the times stated in the Schedule or, if not so stated, in sufficient time to enable the Contractor to meet such delivery or performance dates. In the event that Government-furnished Property is not delivered to the Contractor by such time or times, the Contracting Officer shall, upon timely written request made by the Contractor, make a determination of the delay occasioned the Contractor and shall equitably adjust the estimated cost, fixed fee, or delivery or performance dates, or all of them, and any other contractual provisions affected by such delay, in accordance with the procedures provided for in the clause of this contract entitled "Changes." In the event that Government-furnished Property is received by the Contractor in a condition not suitable for the intended use, the Contractor shall, upon receipt thereof notify the Contracting Officer of such fact and, as directed by the Contracting Officer, either (i) return such property at the Government's expense or otherwise dispose of the property or (ii) effect repairs or modifications. Upon completion of (i) or (ii) above, the Contracting Officer upon written request of the Contractor shall equitably adjust the estimated cost, fixed fee, or delivery or performance dates, or all of them, and any other contractual provision affected by the return or disposition, or the repair or modification, in accordance with the procedures provided for in the clause of this contract entitled "Changes." The foregoing provisions for adjustment are exclusive and the Government shall not be liable to suit for breach of contract by reason of any delay in delivery of Government-furnished Property or delivery of such property in a condition not suitable for its intended use.

(b) Title to all property furnished by the Government shall remain in the Government. Title to all property purchased by the Contractor, for the cost of which the Contractor is entitled is to be reimbursed as a direct item of cost under this contract, shall pass to and vest in the Government upon delivery of such property by the vendor. Title to other property, the cost of which is reimbursable to the Contractor under the contract, shall pass to and vest in the Government upon (i) issuance for use of such property in the performance of this con-

tract, or (ii) commencement of processing or use of such property in the performance of this contract, or (iii) reimbursement of the cost thereof by the Government in whole or in part, whichever first occurs. All Government-furnished Property, together with all property acquired by the Contractor title to which vests in the Government under this paragraph, are subject to the provisions of this clause and are hereinafter collectively referred to as "Government Property."

(c) Title to the Government Property shall not be affected by the incorporation or attachment thereof to any property not owned by the Government, nor shall such Government Property, or any part thereof, be or become a fixture or lose its identity as personalty by reason of affixation to any realty. The Contractor shall comply with the provisions of the "Manual for Control of Government Property in Possession of Contractors" (Appendix B, Armed Services Procurement Regulation), as in effect on the date of the contract, which Manual is hereby incorporated by reference and made a part of this contract.

(d) The Government Property provided or furnished pursuant to the terms of this contract shall, unless otherwise provided herein, be used only for the performance of this contract.

(e) The Contractor shall maintain and administer in accordance with sound industrial practice, a program, for the maintenance, repair, protection and preservation of Government Property so as to assure its full availability and usefulness for the performance of this contract. The Contractor shall take all reasonable steps to comply with all appropriate directions or instructions which the Contracting Officer may prescribe as reasonably necessary for the protection of Government Property.

(f) (1) The Contractor shall not be liable for any loss of or damage to the Government Property, or for expenses incidental to such loss or damage, except that the Contractor shall be responsible for any such loss or damage (including expenses incidental thereto) —

(i) which results from willful misconduct or lack of good faith on the part of any one of the Contractor's directors or officers, or on the part of any of his managers, superintendents, or other equivalent representatives, who has supervision or direction of:

(A) all or substantially all of the Contractor's business, or

(B) all or substantially all of the Contractor's operations at any one plant or separate location in which this contract is being performed, or

(C) a separate and complete major industrial operation in connection with the performance of this contract;

(ii) which results from a failure on the part of the Contractor, due to the willful misconduct or lack of good faith on the part of any of his directors,

officers, or other representatives mentioned in subparagraph (1) above,

(A) to maintain and administer, in accordance with sound industrial practice, the program for maintenance, repair, protection and preservation of Government Property as required by paragraph (e) hereof, or

(B) to take all reasonable steps to comply with any appropriate written directions of the Contracting Officer under paragraph (e) hereof;

(iii) for which the Contractor is otherwise responsible under the express terms of the clause or clauses designated in the Schedule;

(iv) which results from a risk expressly required to be insured under this contract, but only to the extent of the insurance so required to be procured and maintained, or to the extent of insurance actually procured and maintained, whichever is greater; or

(v) which results from a risk which is in fact covered by insurance or for which the Contractor is otherwise reimbursed, but only to the extent of such insurance or reimbursement;

provided that, if more than one of the above exceptions shall be applicable in any case, the Contractor's liability under any one exception shall not be limited by any other exception. This clause shall not be construed as relieving a subcontractor from liability for loss or destruction of or damage to Government Property in his possession or control, except to the extent that the subcontract, with the prior approval of the Contracting Officer, may provide for the relief of the subcontractor from such liability. In the absence of such approval, the subcontract shall contain appropriate provisions requiring the return of all Government Property in as good condition as when received, except for reasonable wear and tear or for the utilization of the property in accordance with the provisions of the prime contract.

(2) The Contractor shall not be reimbursed for, and shall not include as an item of overhead, the cost of insurance, or any provision for a reserve, covering the risk of loss of or damage to the Government Property, except to the extent that the Government may have required the Contractor to carry such insurance under any other provisions of this contract.

(3) Upon the happening of loss or destruction of or damage to the Government Property, the Contractor shall notify the Contracting Officer thereof, and shall communicate with the Loss and Salvage Organization, if any, now or hereafter designated by the Contracting Officer, and with the assistance of the Loss and Salvage Organization so designated (unless the Contracting Officer has designated that no such organization be employed), shall take all reasonable steps to protect the Government Property from further damage, separate the damaged

and undamaged Government Property, put all the Government Property in the best possible order, and furnish to the Contracting Officer a statement of—

(i) the lost, destroyed and damaged Government Property,

(ii) the time and origin of the loss, destruction or damage,

(iii) all known interests in commingled property of which the Government Property is a part, and

(iv) the insurance, if any, covering any part of or interest in such commingled property.

The Contractor shall make repairs and renovations of the damaged Government Property or take such other action, as the Contracting Officer directs.

(4) In the event the Contractor is indemnified, reimbursed, or otherwise compensated for any loss or destruction of or damage to the Government Property, he shall use the proceeds to repair, renovate or replace the Government Property involved, or shall credit such proceeds against the cost of the work covered by the contract, or shall otherwise reimburse the Government, as directed by the Contracting Officer. The Contractor shall do nothing to prejudice the Government's right to recover against third parties for any such loss, destruction or damage and, upon the request of the Contracting Officer, shall, at the Government's expense, furnish to the Government all reasonable assistance and cooperation (including the prosecution of suit and the execution of instruments of assignment in favor of the Government) in obtaining recovery. In addition, where the subcontractor has not been relieved from liability for any loss or destruction of or damage to Government Property, the Contractor shall enforce the liability of the subcontractor for such loss or destruction of or damage to the Government Property for the benefit of the Government.

(5) If this contract is for the development, production, modification, maintenance, or overhaul of aircraft, or otherwise involves the furnishing of aircraft by the Government, the clause of this contract entitled "Flight Risks" shall control, to the extent it is applicable, in the case of loss or destruction of, or damage to, aircraft.

(g) The Government shall at all reasonable times have access to the premises where any of the Government Property is located.

(h) The Government Property shall remain in the possession of the Contractor for such period of time as is required for the performance of this contract unless the Contracting Officer determines that the interests of the Government require removal of such property. In such case the Contractor shall promptly take such action as the Contracting Officer may direct with respect to the removal and shipping of Government Property. In any such

instance, the contract may be amended to accomplish an equitable adjustment in the terms and provisions thereof.

(i) Upon the completion of this contract, or at such earlier dates as may be fixed by the Contracting Officer, the Contractor shall submit to the Contracting Officer in a form acceptable to him, inventory schedules covering all items of the Government Property not consumed in the performance of this contract, or not theretofore delivered to the Government, and shall deliver or make such other disposal of such Government Property as may be directed or authorized by the Contracting Officer. The net proceeds of any such disposal shall be credited to the cost of the work covered by the contract or shall be paid in such manner as the Contracting Officer may direct. The foregoing provisions shall apply to scrap from Government Property; **provided**, however, that the Contracting Officer may authorize or direct the Contractor to omit from such inventory schedules any scrap consisting of faulty castings or forgings, or cutting and processing waste, such as chips, cuttings, borings, turnings, short ends, circles, trimmings, clippings, and remnants, and to dispose of such scrap in accordance with the Contractor's normal practice and account therefor as a part of general overhead or other reimbursable cost in accordance with the Contractor's established accounting procedures.

(j) Unless otherwise provided herein, the Government shall not be under any duty or obligation to restore or rehabilitate, or to pay the costs of the restoration or rehabilitation of the Contractor's plant or any portion thereof which is affected by the removal of any Government Property.

(k) Directions of the Contracting Officer and communications of the Contractor issued pursuant to this clause shall be in writing.

#### **24. INSURANCE—LIABILITY TO THIRD PERSONS (Jan. 1960)**

(a) The Contractor shall procure and thereafter maintain workmen's compensation, employer's liability, comprehensive general liability (bodily injury) and comprehensive automobile liability (bodily injury and property damage) insurance, with respect to performance under this contract, and such other insurance as the Contracting Officer may from time to time require with respect to performance under this contract; **provided**, that the Contractor may with the approval of the Contracting Officer maintain a self-insurance program, and **provided further**, that with respect to workmen's compensation the Contractor is qualified pursuant to statutory authority. All insurance required pursuant to the provisions of this paragraph shall be in such form, in such amounts, and for such periods of time, as the Contracting Officer may from time to time require or approve, and with insurers approved by the Contracting Officer.

(b) The Contractor agrees, to the extent and in the manner required by the Contracting Officer, to submit for the approval of the Contracting Officer any other insurance maintained by the Contractor in connection with the performance of this contract and for which the Contractor seeks reimbursement hereunder.

(c) The Contractor shall be reimbursed: (i) for the portion allocable to this contract of the reasonable cost of insurance as required or approved pursuant to the provisions of this clause, and (ii) for liabilities to third persons for loss of or damage to property (other than property (A) owned, occupied or used by the Contractor or rented to the Contractor, or (B) in the care, custody, or control of the Contractor), or for death or bodily injury, not compensated by insurance or otherwise, arising out of the performance of this contract, whether or not caused by the negligence of the Contractor, his agents, servants or employees, **provided** such liabilities are represented by final judgments or by settlements approved in writing by the Government, and expenses incidental to such liabilities, except liabilities (I) for which the Contractor is otherwise responsible under the express terms of the clause or clauses, if any, specified in the Schedule, or (II) with respect to which the Contractor has failed to insure as required or maintain insurance as approved by the Contracting Officer or (III) which results from willful misconduct or lack of good faith on the part of any of the Contractor's directors, or officers, or on the part of any of his managers, superintendents, or other equivalent representatives, who has supervision or direction of (1) all or substantially all of the Contractor's business, or (2) all or substantially all of the Contractor's operations at any one plant or separate location in which this contract is being performed, or (3) a separate and complete major industrial operation in connection with the performance of this contract. The foregoing shall not restrict the right of the Contractor to be reimbursed for the cost of insurance maintained by the Contractor in connection with the performance of this contract, other than insurance required to be submitted for approval or required to be procured and maintained pursuant to the provisions of this clause, **provided** such cost would constitute Allowable Cost under the clause of this contract entitled "Allowable Cost, Fixed Fee, and Payment."

(d) The Contractor shall give the Government or its representatives immediate notice of any suit or action filed, or prompt notice of any claim made, against the Contractor arising out of the performance of this contract, the cost and expense of which may be reimbursable to the Contractor under the provisions of this contract, and the risk of which is then uninsured or in which the amount claimed exceeds the amount of coverage. The Contractor shall furnish immediately to the Government copies of all pertinent papers received by the Contractor.

If the amount of the liability claimed exceeds the amount of coverage, the Contractor shall authorize representatives of the Government to collaborate with counsel for the insurance carrier, if any, in settling or defending such claim. If the liability is not insured or covered by bond, the Contractor shall, if required by the Government, authorize representatives of the Government to settle or defend any such claim and to represent the Contractor in or take charge of any litigation in connection therewith; **provided, however, that the Contractor may, at his own expense, be associated with the representatives of the Government in the settlement or defense of any such claim or litigation.**

**25. UTILIZATION OF CONCERNS IN LABOR SURPLUS AREAS (Feb. 1962) (The provisions of this clause shall be applicable if this contract is in excess of \$5,000.00.)**

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in areas of persistent or substantial labor surplus where this can be done, consistent with the efficient performance of the contract, at prices no higher than are obtainable elsewhere. The Contractor agrees to use his best efforts to place his subcontracts in accordance with this policy. In complying with the foregoing and with paragraph (b) of the clause of this contract entitled "Utilization of Small Business Concerns," the Contractor in placing his subcontracts shall observe the following order of preference: (i) persistent labor surplus area concerns which are also small business concerns; (ii) other persistent labor surplus area concerns; (iii) substantial labor surplus area concerns which are also small business concerns; (iv) other substantial labor surplus area concerns; and (v) small business concerns which are not labor surplus area concerns.

**26. PAYMENT FOR OVERTIME AND SHIFT PREMIUMS (Feb. 1962)**

(a) Allowable cost shall not include any amount on account of overtime premiums or shift premiums, except to the extent that they either (i) are approved in writing on behalf of the Government or (ii) are paid for work—

(A) necessary to cope with emergencies such as those resulting from accidents, natural disasters, breakdowns of production equipment, or occasional production bottlenecks of a sporadic nature;

(B) by indirect labor employees such as those performing duties in connection with administration, protection, transportation, maintenance, standby plant protection, operation of utilities, or accounting;

(C) in the performance of tests, industrial processes, laboratory procedures, loading or unloading of transportation media, and operations in flight

or afloat, which are continuous in nature and cannot reasonably be interrupted or otherwise completed; or

(D) which will result in lower overall cost to the Government.

(b) The cost of overtime premiums or shift premiums otherwise allowable under (a) above shall be allowed only to the extent the amount thereof is reasonable and properly allocable to the work under this contract.

**27. COMPETITION IN SUBCONTRACTING (Apr. 1962)**

The Contractor shall select subcontractors (including suppliers) on a competitive basis to the maximum practical extent consistent with the objectives and requirements of the contract.

**28. FILING OF PATENT APPLICATIONS (Jan. 1955)**

(a) Before filing or causing to be filed a patent application disclosing any subject matter of this contract, which subject matter is classified "Secret" or higher, the Contractor shall, citing the thirty (30) days provision below, transmit the proposed application to the Contracting Officer for determination whether, for reasons of national security, such application should be placed under an order of secrecy or sealed in accordance with the provisions of 35 U.S. Code 181-188 or the issuance of a patent should be otherwise delayed under pertinent statutes or regulations; and the Contractor shall observe any instructions of the Contracting Officer with respect to the manner of delivery of the patent application to the U.S. Patent Office for filing, but the Contractor shall not be denied the right to file such patent application. If the Contracting Officer shall not have given any such instructions with thirty (30) days from the date of mailing or other transmittal of the proposed application, the Contractor may file the application.

(b) The Contractor shall furnish to the Contracting Officer, at the time of or prior to the time when the Contractor files or causes to be filed a patent application disclosing any subject matter of this contract, which subject matter is classified "Confidential," a copy of such application for determination whether, for reasons of national security, such application should be placed under an order of secrecy or the issuance of a patent should be otherwise delayed under pertinent statutes or regulation.

(c) In filing any patent application coming within the scope of this clause, the Contractor shall observe all applicable security regulations covering the transmission of classified subject matter.

**29. EXCUSABLE DELAYS (Jul. 1958)**

Except with respect to defaults of subcontractors, the Contractor shall not be in default by reason of any failure in performance of this contract in accordance with its terms (including any failure by the Contractor to make progress in the prosecution of the work hereunder which endangers such performance) if such failure arises out of causes beyond the control and without the fault or negligence of the Contractor. Such causes may include, but are not restricted to: acts of God or of the public enemy; acts of the Government in either its sovereign or contractual capacity; fires; floods; epidemics; quarantine restrictions; strikes; freight embargoes; and unusually severe weather; but in every case the failure to perform must be beyond the control and without the fault or negligence of the Contractor. If the failure to perform is caused by the failure of a subcontractor to perform or make progress, and if such failure arises out of causes beyond the control of both the Contractor and subcontractor, and without the fault or negligence of either of them, the Contractor shall not be deemed to be in default, unless (i) the supplies or services to be furnished by the subcontractor were obtainable from other sources, (ii) the Contracting Officer shall have ordered the Contractor in writing to procure such supplies or services from such other sources, and (iii) the Contractor shall have failed to comply reasonably with such order. Upon request of the Contractor, the Contracting Officer shall ascertain the facts and extent of such failure and, if he shall determine that any failure to perform was occasioned by any one or more of the said causes, the delivery schedule shall be revised accordingly, subject to the rights of the Government under the clause hereof entitled "Termination."

**30. NOTICE TO THE GOVERNMENT OF LABOR DISPUTES (Sep. 1958)**

(a) Whenever the Contractor has knowledge that any actual or potential labor dispute is delaying or threatens to delay the timely performance of this contract, the Contractor shall immediately give notice thereof, including all relevant information with respect thereto, to the Contracting Officer.

(b) The Contractor agrees to insert the substance of this clause, including this paragraph (b), in any subcontract hereunder as to which a labor dispute may delay the timely performance of this contract; except that each such subcontract shall provide that in the event its timely performance is delayed or threatened by delay by any actual or potential labor dispute, the subcontractor shall immediately notify his next higher tier subcontractor, or the prime contractor, as the case may be, of all relevant information with respect to such dispute.

**31. GRATUITIES (Mar. 1952)**

(a) The Government may, by written notice to the Contractor, terminate the right of the Contractor to proceed under this contract if it is found, after notice and hearing, by the Secretary or his duly authorized representative, that gratuities (in the form of entertainment, gifts, or otherwise) were offered or given by the Contractor, or any agent or representative of the Contractor, to any officer or employee of the Government with a view toward securing a contract or securing favorable treatment with respect to the awarding or amending, or the making of any determinations with respect to the performing of such contract; **provided**, that the existence of the facts upon which the Secretary or his duly authorized representative makes such findings shall be in issue and may be reviewed in any competent court.

(b) In the event this contract is terminated as provided in paragraph (a) hereof, the Government shall be entitled (i) to pursue the same remedies against the Contractor as it could pursue in the event of a breach of the contract by the Contractor, and (ii) as a penalty in addition to any other damages to which it may be entitled by law, to exemplary damages in an amount (as determined by the Secretary or his duly authorized representative) which shall be not less than three nor more than ten times the costs incurred by the Contractor in providing any such gratuities to any such officer or employee.

(c) The rights and remedies of the Government provided in this clause shall not be exclusive and are in addition to any other rights and remedies provided by law or under this contract.

**32. LIMITATION ON WITHHOLDING OF PAYMENTS (Feb. 1959)**

If more than one clause or Schedule provision of this contract authorizes the temporary withholding of amounts otherwise payable to the Contractor for work performed under this contract, the total of the amounts so withheld at any one time shall not exceed the greatest amount which may be withheld under any one such clause or Schedule provision at that time; **provided**, that this limitation shall not apply to:

- (i) withholdings pursuant to any clause relating to wages or hours of employees;
- (ii) withholdings not specifically provided for by this contract; and
- (iii) the recovery of overpayments.

**33. CHANGES (Feb. 1959)**

The Contracting Officer may at any time, by a written order, and without notice to the sureties, if any, make changes, within the general scope of this contract, in any one or more of the following:

- (i) drawings, designs, or specifications, (ii) method

of shipment or packing; (iii) place of inspection, delivery, or acceptance, and (iv) the amount of Government-furnished Property. If any such change causes an increase or decrease in the estimated cost of, or the time required for performance of this contract, or otherwise affects any other provisions of this contract, whether changed or not changed by any such order, an equitable adjustment shall be made (i) in the estimated cost or delivery schedule, or both, (ii) in the amount of any fee to be paid to the Contractor, and (iii) in such other provisions of the contract as may be so affected, and the contract shall be modified in writing accordingly. Any claim by the Contractor for adjustment under this clause must be asserted within sixty (60) days from the date of receipt by the Contractor of the notification of change; **provided**, however, that the Contracting Officer, if he decides that the facts justify such action, may receive and act upon any such claim asserted at any time prior to final payment under this contract. Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of the clause of this contract entitled "Disputes." However, nothing in this clause shall excuse the Contractor from proceeding with the contract as changed.

#### **34. STOP WORK ORDER (Jul. 1960)**

(a) The Contracting Officer may, at any time, by written order to the Contractor, require the Contractor to stop all, or any part, of the work called for by this contract for a period of ninety (90) days after the order is delivered to the Contractor, and for any further period to which the parties may agree. Any such order shall be specifically identified as a Stop Work Order issued pursuant to this clause. Upon receipt of such an order, the Contractor shall forthwith comply with its terms and take all reasonable steps to minimize the incurrence of costs allocable to the work covered by the order during the period of work stoppage. Within a period of ninety (90) days after a stop work order is delivered to the Contractor, or within any extension of that period to which the parties shall have agreed, the Contracting Officer shall either—

- (i) cancel the stop work order, or
- (ii) terminate the work covered by such order as provided in the "Termination" clause of this contract.

(b) If a stop work order issued under this clause is canceled or the period of the order or any extension thereof expires, the Contractor shall resume work. An equitable adjustment shall be made in the delivery schedule, the estimated cost, the fee, or a combination thereof, and in any other provisions of the contract that may be affected, and the contract shall be modified in writing accordingly, if—

(i) the stop work order results in an increase in the time required for, or in the Contractor's cost properly allocable to, the performance of any part of this contract, and

(ii) the Contractor asserts a claim for such adjustment within thirty (30) days after the end of the period of work stoppage; **provided that**, if the Contracting Officer decides the facts justify such action, he may receive and act upon any such claim asserted at any time prior to final payment under this contract.

Failure to agree to any adjustment shall be a dispute concerning a question of fact within the meaning of "Disputes" clause of this contract.

(c) If a stop work order is not canceled and the work covered by such order is terminated for the convenience of the Government, the reasonable costs resulting from the stop work order shall be allowed in arriving at the termination settlement.

#### **35. REPORTS OF WORK (Jul. 1960)**

(a) The Contractor shall submit reports making full disclosure of all work done and the results thereof, in the manner, at the times, and to the extent set forth in the Schedule; **provided that**, unless otherwise specified in the Schedule, the Contractor shall submit such reports in triplicate from time to time as requested and upon completion (or earlier termination) of the work. Except as may be otherwise specified in the Schedule, or unless the Contractor is otherwise instructed, the Contractor shall, upon completion (or earlier termination) of the work deliver any working drawings and specifications of any prototypes as may have been developed.

(b) If the Contractor becomes unable to complete the contract work and to deliver at the time specified in the Schedule because of technical difficulties, notwithstanding the exercise of good faith and diligent efforts in performance of the work, he shall give the Contracting Officer written notice of the anticipated delays with reasons therefor, not less than forty-five (45) days before the completion date specified in the Schedule or within such time as the Contracting Officer deems sufficient. When notice is so required, the Contracting Officer may, in his discretion, extend the time specified in the Schedule for such period as he deems advisable.

#### **36. DATA—WITHHOLDING OF PAYMENT**

(Apr. 1962) (This clause is applicable only if this contract contains the "Data" clause set forth in ASPR 9-203.1)

If "Subject Data" (as defined in the clause of this contract entitled "Data"), or any part thereof, is not delivered within the time specified by this contract or is deficient upon delivery (including having restrictive markings not specifically authorized

by the contract), the Contracting Officer may, until such data is delivered or deficiencies are corrected, withhold payment due the Contractor on account of allowable costs and fixed fee, of ten percent (10%) of the contract price, unless a lesser withholding is specified in the schedule. Payments shall not be withheld nor any other action taken pursuant to this clause where the Contractor's failure to make timely delivery or to deliver data without deficiencies arises out of causes beyond the control and without the fault or negligence of the Contractor within the meaning of the clause hereof entitled "Excusable Delays." The withholding of any amount or subsequent payment thereof to the Contractor shall not be construed as a waiver of any rights accruing to the Government under this contract.

### **37. SUBMISSION OF VOUCHERS (Jun. 1959)**

Pursuant to the Allowable Cost, Fixed Fee, and Payment (or Allowable Cost and Payment) General Provision of this contract, the Contractor shall submit vouchers to the Contracting Officer, with the supporting statement of costs describing the amounts claimed for: direct salaries and wages, labor burden or overhead, materials, and other direct and indirect costs.

### **38. INTEREST (Feb. 1962)**

Notwithstanding any other provisions of this contract, unless paid within 30 days all amounts that become payable by the Contractor to the Government under this contract (net of any applicable tax credit under the Internal Revenue Code) shall bear interest at the rate of six percent per annum from the date due until paid, and shall be subject to the adjustments as provided by Part 6 of Appendix E of the Armed Services Procurement Regulation, as in effect on the date of this contract. Amounts shall be due upon the earliest one of (i) the date fixed pursuant to this contract, (ii) the date of the first demand for payment, (iii) the date of a supplemental agreement fixing the amount, or (iv) if this contract provides for revision of prices, the date of written notice to the Contractor stating the amount of refund payable in connection with a pricing proposal or in connection with a negotiated pricing agreement not confirmed by contract supplement.

### **39. COMPETITION IN SUBCONTRACTING (Apr. 1962)**

The contractor shall select subcontractors (including suppliers) on a competitive basis to the maximum practical extent consistent with objectives and requirements of the contract.

### **40. UTILIZATION OF CONCERNS IN LABOR SURPLUS AREAS (Feb. 1962)**

It is the policy of the Government to place contracts with concerns which will perform such contracts substantially in areas of persistent or substantial labor surplus where this can be done, consistent with the efficient performance of the contract, at prices no higher than are obtainable elsewhere. The Contractor agrees to use his best efforts to place his subcontracts in accordance with this policy. In complying with the foregoing and with paragraph (b) of the clause of this contract entitled "Utilization of Small Business Concerns," the Contractor in placing his subcontracts shall observe the following order of preference: (i) persistent labor surplus area concerns which are also small business concerns; (ii) other persistent labor surplus area concerns; (iii) substantial labor surplus area concerns which are also small business concerns; (iv) other substantial labor surplus area concerns; and (v) small business concerns which are not labor surplus area concerns.

### **41. WORK HOURS ACT OF 1962—OVERTIME COMPENSATION (Oct. 1962)**

This contract to the extent that it is of a character specified in the Work Hours Act of 1962 (Public Law 87-581, 76 Stat. 357-360) and is not covered by the Walsh-Healey Public Contracts Act (41 U. S. C. 35-45) is subject to the following provisions and to all other provisions and exceptions of said Work Hours Act of 1962.

(a) No contractor or subcontractor contracting for any part of the contract work shall require or permit any laborer or mechanic to be employed on such work in excess of eight hours in any calendar day or in excess of forty hours in any workweek unless such laborer or mechanic receives compensation at a rate not less than one and one-half times his basic rate of pay for all hours worked in excess of eight hours in any calendar day or in excess of forty hours in such workweek, whichever is the greater number of overtime hours.

(b) In the event of any violation of the provisions of paragraph (a), the contractor and any subcontractor responsible for such violation shall be liable to any affected employee for his unpaid wages. In addition, such contractor or subcontractor shall be liable to the United States for liquidated damages. Such liquidated damages shall be computed, with respect to each individual laborer or mechanic employed in violation of the provisions of paragraph (a), in the sum of \$10 for each calendar day on which such employee was required or permitted to work in excess of eight hours or in excess of forty hours in a workweek without payment of the required overtime wages.

(c) The Contracting Officer may withhold, or cause to be withheld, from moneys payable on account of work performed by the contractor or sub-



contractor, the full amount of wages required by this contract and such sums as may administratively be determined to be necessary to satisfy any liabilities of such contractor or subcontractor for liquidated damages as provided in paragraph (b).

#### **42. AUDIT (Nov. 1962)**

(a) For purposes of verifying that cost or pricing data submitted, in conjunction with the negotiation of this contract or any contract change or other modification involving an amount in excess of \$100,000 are accurate, complete, and current, the Contracting Officer, or his authorized representatives, shall—until the expiration of three years from the date of final payment under this contract—have the right to examine those books, records, documents and other supporting data which will permit adequate evaluation of the cost or pricing data submitted, along with the computations and projections used therein, which were available to the Contractor as of the date of execution of the Contractor's Certificate of Current Cost or Pricing Data.

(b) The Contractor agrees to insert the substance of this clause including this paragraph (b) in all subcontracts hereunder in excess of \$100,000 unless the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

#### **43. PRICE REDUCTION FOR DEFECTIVE COST OR PRICING DATA (Nov. 1962)**

(a) If the Contracting Officer determines that any price, including profit or fee, negotiated in connection with this contract was increased by any significant sums because the Contractor, or any subcontractor in connection with a subcontract covered by (c) below, furnished incomplete or inaccurate cost or pricing data or data not current as certified in the Contractor's Certificate of Current Cost or Pricing Data, then such price shall be reduced accordingly and the contract shall be modified in writing to reflect such adjustment.

(b) Failure to agree on a reduction shall be a dispute concerning a question of fact within the meaning of the "Disputes" clause of this contract.

(c) The Contractor agrees to insert the substance of paragraphs (a) and (c) of this clause in each of his cost-reimbursement type, price redeterminable, or incentive subcontracts hereunder, and in any other subcontract hereunder in excess of \$100,000 unless the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation. In each such excepted subcontract hereunder which exceeds \$100,000, the Contractor shall insert the substance of the following clause.

#### **Price Reduction for Defective Cost or Pricing Data—Price Adjustments**

(a) This clause shall become operative only with respect to any change or other modification made pursuant to one or more provisions of this contract which involves a price adjustment in excess of \$100,000 that is not based on adequate price competition, established catalog or market price of commercial items sold in substantial quantities to the general public or prices set by law or regulation. The right to price reduction under this clause shall be limited to such price adjustments.

(b) If the Contractor determines that any price, including profit or fee, negotiated in connection with any price adjustment under this contract was increased by any significant sums because the subcontractor or any of his subcontractors in connection with a subcontract covered by paragraph (c) below, furnished incomplete or inaccurate cost or pricing data or data not current as of the date of execution of the subcontractor's certificate of current cost or pricing data, then such price shall be reduced accordingly and the subcontract shall be modified in writing to reflect such adjustment.

(c) The subcontractor agrees to insert the substance of this clause in each subcontract hereunder which exceeds \$100,000.

#### **44. SUBCONTRACTOR COST AND PRICING DATA (Nov. 1962)**

(a) The Contractor shall require subcontractors hereunder to submit cost or pricing data under the following circumstances:

(i) prior to award of any cost-reimbursement type, incentive, or price-redeterminable subcontract;

(ii) prior to the award of any subcontract the price of which is expected to exceed \$100,000;

(iii) prior to the pricing of any subcontract change or other modification for which the price adjustment is expected to exceed \$100,000;

except, in the case of (ii) or (iii), where the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

(b) The Contractor shall require subcontractors to certify, in substantially the same form as that used in the certificate by the Prime Contractor to the Government, that to the best of their knowledge and belief, the cost and pricing data submitted under (a) above is accurate, complete, and current as of the date of execution, which date shall be as close as possible to the date of agreement on the negotiated price of the subcontract.

(c) The Contractor shall insert the substance of this clause, including this paragraph (c), in each subcontract hereunder which exceeds \$100,000, except where the price thereof is based on adequate



price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation. In each such excepted subcontract hereunder in excess of \$100,000 the Contractor shall insert the substance of the following clause:

**Subcontractor Cost and Pricing Data—  
Price Adjustments**

(a) Paragraphs (b) and (c) of this clause shall become operative only with respect to any change or other modification made pursuant to one or more provisions of this contract which involves a price adjustment in excess of \$100,000. The requirements of this clause shall be limited to such price adjustments.

(b) The Contractor shall require subcontractors hereunder to submit cost or pricing data under the following circumstances:

(i) prior to award of any cost-reimbursement type, incentive, or price-redeterminable subcontract;

(ii) prior to the award of any subcontract the price of which is expected to exceed \$100,000;

(iii) prior to the pricing of any subcontract change or other modification for which the price adjustment is expected to exceed \$100,000;

except, in the case of (ii) or (iii), where the price is based on adequate price competition, established catalog or market prices of commercial items sold in substantial quantities to the general public, or prices set by law or regulation.

(c) The Contractor shall require subcontractors to certify, in substantially the same form as that used in the Certificate by the Prime Contractor to the Government, that to the best of their knowledge and belief the cost and pricing data submitted under (b) above is accurate, complete, and current as of the date of the execution, which date shall be as close as possible to the date of agreement on the negotiated price of the contract modification.

(d) The Contractor shall insert the substance of this clause including this paragraph (d) in each subcontract hereunder which exceeds \$100,000.

**45. NEGOTIATED, OVERHEAD RATES (Dec. 1962)**

(a) Notwithstanding the provisions of the clause of this contract entitled "Allowable Cost, Fixed Fee, and Payment," the allowable indirect costs under this contract shall be obtained by applying negotiated overhead rates to bases agreed upon by the parties, as specified below.

(b) The Contractor, as soon as possible but not later than ninety (90) days after the expiration of each period specified in the Schedule, shall submit to the Contracting Officer with a copy to the cognizant audit activity a proposed final overhead rate or rates for that period based on the Contractor's actual cost experience during that period, together with supporting cost data. Negotiation of final overhead rates by the Contractor and the Contracting Officer shall be undertaken as promptly as practicable after receipt of the Contractor's proposal.

(c) Allowability of costs and acceptability of cost allocation methods shall be determined in accordance with Part 2 of Section XV of the Armed Services Procurement Regulation as in effect on the date of this contract.

(d) The results of each negotiation shall be set forth in a modification to this contract, which shall specify (i) the agreed final rates, (ii) the bases to which the rates apply, and (iii) the periods for which the rates apply.

(e) Pending establishment of final overhead rates for any period, the Contractor shall be reimbursed either at negotiated provisional rates as provided in the Schedule or at billing rates acceptable to the Contracting Officer, subject to appropriate adjustment when the final rates for that period are established. To prevent substantial over or under payment, the provisional or billing rates may, at the request of either party, be revised by mutual agreement, either retroactively or prospectively. Any such revision of negotiated provisional rates provided in the Schedule shall be set forth in an amendment to this contract.

(f) Any failure by the parties to agree on any final rate or rates under this clause shall be considered a dispute concerning a question of fact for decision by the Contracting Officer within the meaning of the "Disputes" clause of this contract.

**SECRET**

**46. ALTERATIONS IN CONTRACT**

The following alterations have been made in the provisions of this contract.

**SECRET**